



Agilent J7211A/B/C Attenuation Control Unit

Operating and Service
Manual

Notices

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Safety Notices

CAUTION

A CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

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A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

General Safety Information

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Agilent Technologies, Inc. assumes no liability for the customer's failure to comply with these regulations.

NOTE

The J7211A/B/C complies with INSTALLATION CATEGORY II as well as POLLUTION DEGREE 2 in IEC61010-1. The J7211A/B/C is an INDOOR USE product.

Before applying power

Verify that all safety precautions are taken. Make all connections to the unit before applying power.

Ground the instrument

This product is provided with protective earth terminals. To minimize shock hazard, the instrument must be connected to the ac power mains through a grounded power cable, with the ground wire firmly connected to an electrical ground (safety ground) at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

DO NOT operate the product in an explosive atmosphere or in the presence of flammable gases or fumes

DO NOT use repair fuses or short-circuited fuse holders

For continued protection against fire, replace the line fuse(s) only with fuse(s) of the same voltage and current rating and type.

DO NOT Remove the Instrument Cover

Only qualified, service-trained personnel who are aware of the hazards involved should remove the instrument covers. Always disconnect the power cable and any external circuits before removing the instrument cover.

DO NOT Modify the Instrument

Do not install substitute parts or perform any unauthorized modification to the instrument. Return the instrument to an Agilent Sales and Service Office for service and repair to ensure that safety features are maintained.

In Case of Damage

Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified, service-trained personnel.

Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

This product complies with the WEEE Directive (2002/96/EC) marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category:

With reference to the equipment types in the WEEE Directive Annex 1, this product is classed as a “Monitoring and Control Instrumentation” product.

The affixed product label is shown as below:








Do not dispose in domestic household waste.

To return unwanted products, contact your local Agilent office, or visit:

www.agilent.com/environment/product for more information.

Safety Symbols

The following symbols on the instrument and in the documentation indicate precautions that must be taken to maintain safe operation of the instrument.

	Alternating current
	Earth (grounding) terminal
	Off (supply)
	On (supply)
	Caution, risk of danger (refer to this manual for specific Warning or Caution information)

Contacting Agilent

For more information, please contact your nearest Agilent office.

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Canada	(877) 894-4414
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Australia	1 800 629 485
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Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
Spain	34 (91) 631 3300
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Switzerland(French)	41 (21) 8113811 (Opt 2)
Switzerland(German)	0800 80 53 53 (Opt 1)
United Kingdom	44 (0) 118 9276201
Other European Countries:	www.agilent.com/find/contactus

Or, go to www.agilent.com/find/assist for more information.

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1 Introduction

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["Types of RF connectors for J7211A/B/C"](#) on page 16

This chapter provides you the overview of Agilent J7211A/B/C attenuation control unit that covers the key features of this instrument and also the physical appearances for different models.



Key Features of Agilent J7211A/B/C Attenuation Control Unit

The J7211A/B/C attenuation control units are standalone portable instruments that offer a user-defined attenuation sweep function. This feature allows setting of desired attenuation range, step size, number of cycles and attenuation configuration based on user application's requirements.

J7211A/B/C are designed in a way which make them suitable for benchtop and ATE testing for applications such as base station transceivers (BTS) test, WLAN, WIMAX™, MIMO and WCDMA. Exceptional insertion loss repeatability and excellent attenuation accuracy and flatness over 5 million cycles operating life ensure precise measurements and reduce calibration intervals reducing cost of test.

The features and functions of attenuation control units are easily accessible via front panel using soft keys and the rotary knob. J7211A/B/C are LXI Class C compliant instruments which provides GPIB, USB and LAN connectivity for easy remote control and triggering through a full-featured graphical web interface. This attenuation control units also allow relative attenuation to any values by selecting relative attenuation step function. Calibration data is stored in the instrument's memory for fast, simple and easy retrieval.

Table 1-1 Key Features of J7211A/B/C

Key Features
Attenuation sweep function
Excellent insertion loss repeatability is < 0.1dB typical throughout 5 million cycles operating life
GPIB, USB, LAN (LXI Class C)
Relative attenuation step function
Keypads & rotary knob
Calibration data storage

J7211A/B/C Front and Rear Panels at a Glance

This section briefly explains the functions of front panel keys of J7211A/B/C.



Figure 1-1 J7211A/B/C Front Panel Features

- 1 **LCD screen.** This is a window which shows operating selections for front panel operation.
- 2 **Softkeys.** These unmarked keys are referred to by the text on display next to them.
- 3 **Keypads.** These keys are used to enter numbers e.g. attenuation values, step size, number of cycles and dwell time.
- 4 **Rotary knob.** Turn this knob to scroll between the submenus on display. This knob also serves as alternative option for keypads.
- 5 **Connectors.** Type N (f)/SMA (f)/3.5 mm (f) connectors for connection to subsequent device under test or instruments. Refer J7211A/B/C's connectors for more details.
- 6 **On/Standby.** Press this key to switch between on and standby. When power is supplied, the background LED is red. Pressing the key once, boots up attenuation control unit and the background LED turns to green.
- 7 **LAN.** This is an indicator which tells whether LAN connection is setup or otherwise. Green light means LAN connection is established.

- 8 **Local.** Press this key to control the attenuation control unit from front panel when it is operating via remote interfaces. Green light means local operation is in used.
- 9 **Menu/Enter.** Press this key to select the highlighted parameter or select the highlighted field or go back to main menu.
- 10 **Relative.** Press this key to operate relative attenuation step function.

This section briefly describes the function of the rear panel connectors of J7211A/B/C.

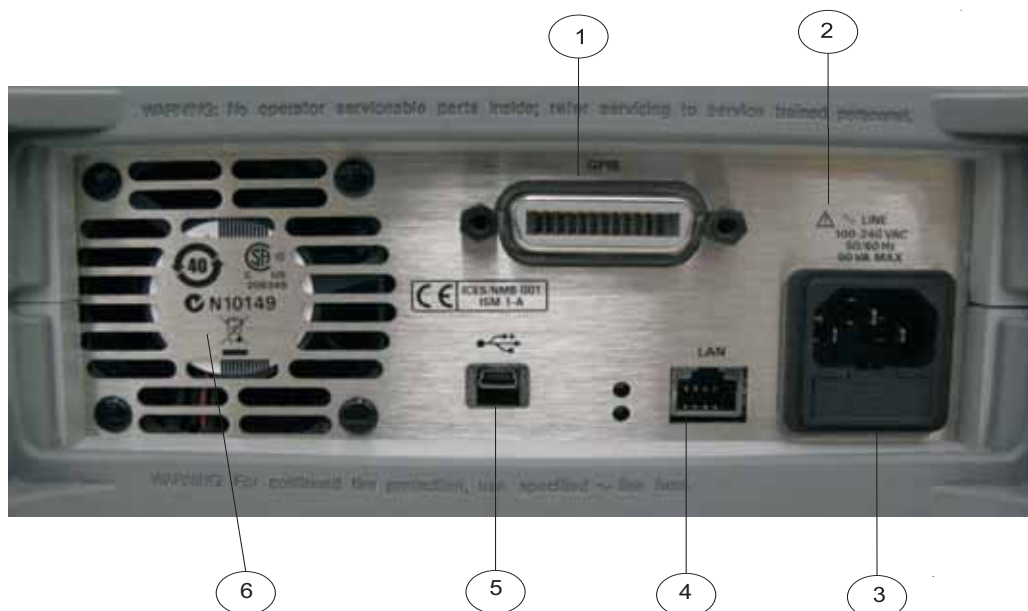


Figure 1-2 J7211A/B/C Rear Panel Features

- 1 **GPIB connector.** The interface connector from a source device to a listening device for remote mode of operation.
- 2 **Alert symbol.** This symbol is used to point out a necessary reference for the user.
- 3 **Receptacle.** Matches transformer primary to line voltage via power cable.
- 4 **LAN Connector.** The interface connector for LAN cable.
- 5 **USB Connector.** The interface connector for Type mini B 5-pin USB cable.
- 6 **Instrument Markings.**

Types of RF connectors for J7211A/B/C

Below illustrations are the RF connectors' selections for J7211A/B/C.



Figure 1-3 Type N (f) connectors for J7211A/B only



Figure 1-4 SMA (f) connectors for J7211A/B only



Figure 1-5 3.5 mm (f) connectors for J7211C only



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Bench Operation 19

This chapter explains how to unpack and check your instrument. It also explains how to prepare your instrument for bench operation.



Initial Inspection

- 1 Unpack and inspect the shipping container and its contents thoroughly to ensure that nothing was damaged during shipment. If the shipping container or cushioning material is damaged, the contents should be checked both mechanically and electrically.
- 2 If the contents are damaged or defective, contact your nearest Agilent Technologies Service & Support Office. Refer to the Service and Support information in the front matter of this manual. Agilent Technologies will arrange for repair or replacement of the damaged or defective equipment. Keep the shipping materials for the carrier's inspection.
- 3 If you are returning your instrument for service, repackaging the attenuation control unit requires original shipping containers and materials or their equivalents. Agilent Technologies can provide packaging materials identical to the original materials. Refer to "Service and Support" on page 6 for the Agilent Technologies nearest to you.

Bench Operation

Pull the handle outwards, and adjust it into one of the two positions illustrated in [Figure 2- 1](#).

- (Top) Handle placed underneath the instrument to assure self- alignment of the instruments when stacked
- (Bottom) Handle tilted to raise the front of the instrument for easier viewing of the front panel



Figure 2-1 Handle Positioning for Bench Operation

2 Installation



3 Specifications

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This chapter provides you the specifications of Agilent J7211A/B/C attenuation control unit.

General Specifications

Specifications

Specifications refer to performance standards or limits against which the attenuation control unit is tested.

Product Model	J7211A	J7211B	J7211C
Frequency Range	DC to 6 GHz	DC to 18 GHz	DC to 26.5 GHz
Attenuation Range	0 to 121 dB	0 to 121 dB	0 to 101 dB
Attenuation Step Size*	1, 5 and 10 dB	1, 5 and 10 dB	1, 5 and 10 dB
Insertion loss (at 0 dB)	2.5 dB	DC to 6 GHz: 2.5 dB DC to 18 GHz: 5 dB	DC to 6 GHz: 2.5 dB DC to 18 GHz: 4 dB DC to 26.5 GHz: 5 dB
Return loss (VSWR)	14 dB (1.50)	DC to 6 GHz: 14 dB (1.50) DC to 18 GHz: 10 dB (1.90)	DC to 6 GHz: 16 dB (1.35) DC to 18 GHz: 11 dB (1.78) DC to 26.5 GHz: 7 dB (2.61)
Maximum RF power input	1 W (+30 dBm)		
Switching Speed	20 ms		
Operating Life	5 million cycles		
Connectivity	GPIB, USB and LAN (LXI Class C)		
Connector Type	SMA/Type-N		3.5 mm

Table 3-1 J7211A/B/C's Specifications

* For SCPI command, user can set any step size value from 1 dB to maximum attenuation.

Attenuation Accuracy of J7211A/B/C

J7211A & J7211B¹ Attenuation Control Unit

Attenuation (dB)	DC - 6 GHz	6 - 18 GHz
1 to 10	± 0.6 dB	± 0.8 dB
11 to 20	± 0.7 dB	± 1.4 dB
21 to 40	± 1.2 dB	± 2.0 dB
41 to 60	± 1.8 dB	± 2.8 dB
61 to 80	± 2.4 dB	± 3.6 dB
81 to 100	± 3.0 dB	± 4.4 dB
101 to 121	± 3.3 dB	± 5.3 dB

¹ Refer attenuation accuracy for J7211A from DC to 6 GHz while J7211B from DC to 18 GHz

J7211C Attenuation Control Unit

Attenuation (dB)	DC - 18 GHz	18 - 26.5 GHz
1 to 10	± 0.7 dB	± 0.9 dB
11 to 20	± 1.2 dB	± 1.4 dB
21 to 40	± 1.4 dB	± 1.6 dB
41 to 60	± 1.9 dB	± 2.5 dB
61 to 80	± 2.5 dB	± 2.7 dB
81 to 101	± 3.7 dB	± 4.0 dB

Supplement Characteristics

Supplement characteristics are intended to provide useful information and are typical but non-warranted performance parameters.

Power	100 to 240 Vac, automatic selection, 50/60 Hz 50 VA maximum Mains supply voltage fluctuations are not to exceed 10 percent of the nominal supply voltage
-------	--

Table 3-2 J7211A/B/C Supplement Characteristics

Connector Type	Pin Depth Specifications		Specifications
	(mm)	(inches)	
Type N 50 ohm female	4.750 to 5.258	0.187 to 0.207	MIL-C-39012
SMA female	0.000 to -0.254	0.000 to -0.010	MIL-C-39012
3.5mm female	0.000 to -0.076	0.000 to -0.003	IEEE STD 287 GPC

Table 3-3 J7211A/B/C's Pin Depth Specifications

Physical Specifications

There are 2 connector options for J7211A and J7211B which are Type-N (f) connectors and SMA (f) connectors . J7211C is comes with 3.5mm (f) connectors. The following show the dimensions of different types of connector.

Attenuation Control Unit with Type-N (f) connector*

Net Weight	3.8 kg (8.4 lbs)
Dimensions (H x W x D) with handle and rubber bumper	103.8 mm x 232.2 mm x 399.4 mm (4.09 inches x 9.14 inches x 15.72 inches)
Dimensions (H x W x D) without handle and rubber bumper	88.3 mm x 212.7 mm x 349.4 mm (3.48 inches x 8.37 inches x 13.76 inches)

* Only available for J7211A-001 and J7211B-001

Attenuation Control Unit with SMA (f) connector*

Net Weight	3.8 kg (8.4 lbs)
Dimensions (H x W x D) with handle and rubber bumper	103.8 mm x 232.2 mm x 385.8 mm (4.09 inches x 9.14 inches x 15.19 inches)
Dimensions (H x W x D) without handle and rubber bumper	88.3 mm x 212.7 mm x 349.4 mm (3.48 inches x 8.37 inches x 13.76 inches)

* Only available for J7211A-002 and J7211B-002

Attenuation Control Unit with 3.5 mm (f) connector*

Net Weight	3.8 kg (8.4 lbs)
Dimensions (H x W x D) with handle and rubber bumper	103.8 mm x 232.2 mm x 385.8 mm (4.09 inches x 9.14 inches x 15.19 inches)
Dimensions (H x W x D) without handle and rubber bumper	88.3 mm x 212.7 mm x 349.4 mm (3.48 inches x 8.37 inches x 13.76 inches)

* Only available for J7211C

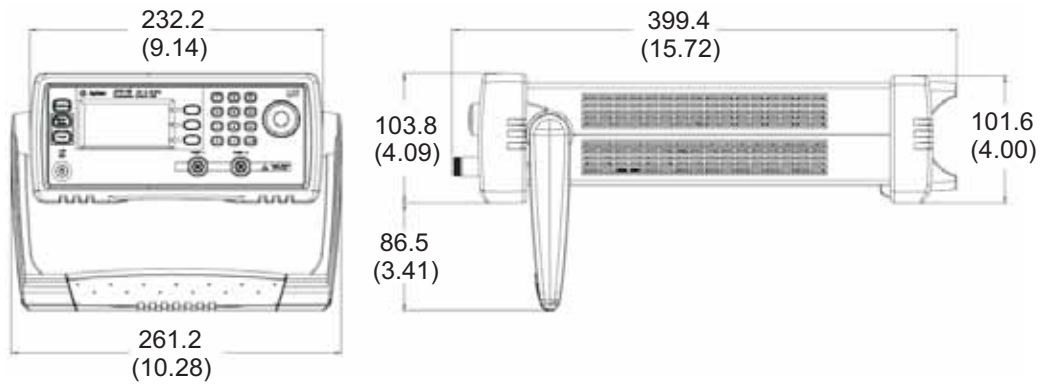


Figure 3-1 Type N (f) connectors for J7211A/B with bumper kit and handle

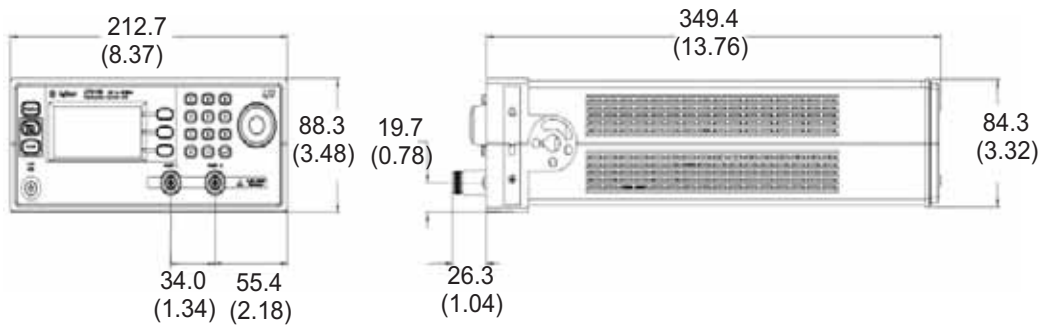


Figure 3-2 Type N (f) connectors for J7211A/B without bumper kit and handle

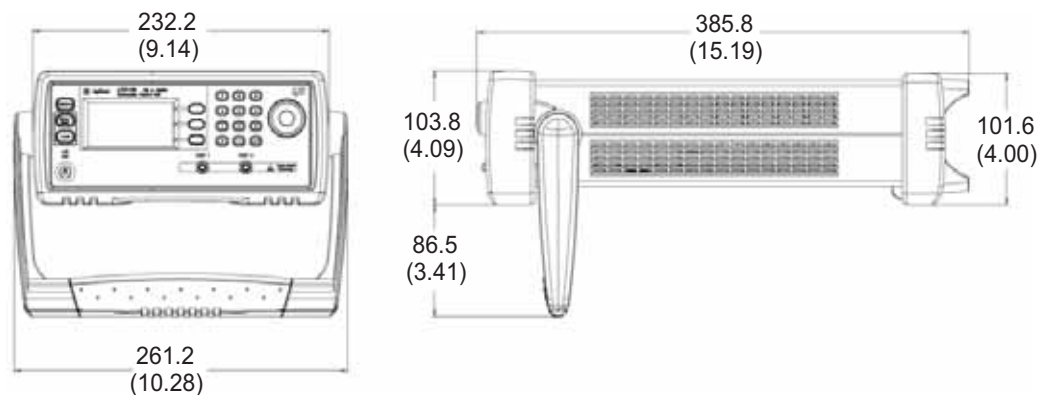


Figure 3-3 SMA (f) connectors for J7211A/B with bumper kit and handle

3 Specifications

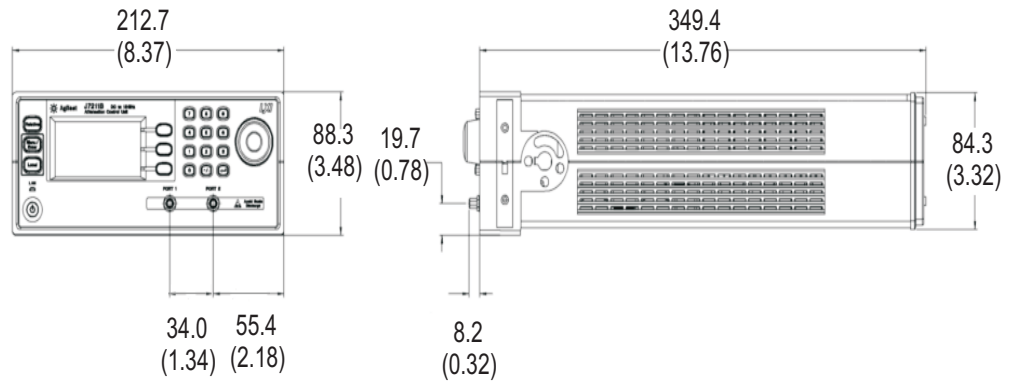


Figure 3-4 SMA (f) connectors for J7211A/B without bumper kit and handle

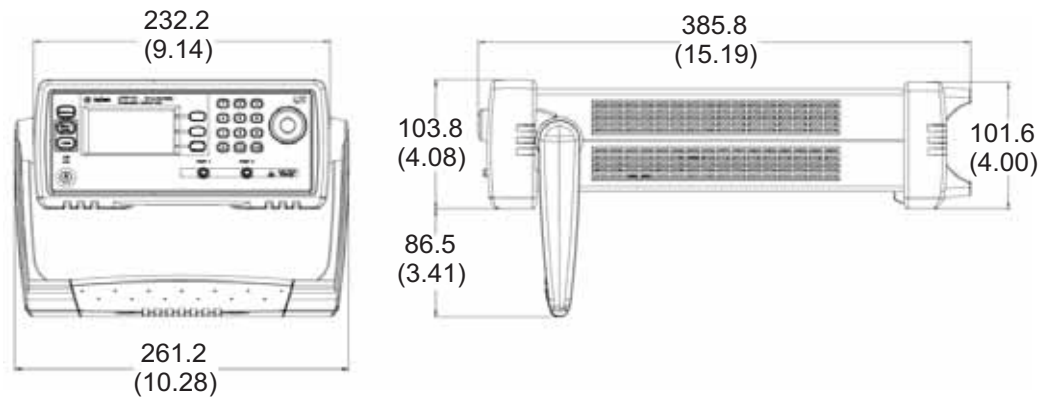


Figure 3-5 3.5 mm (f) connectors for J7211C with bumper kit and handle

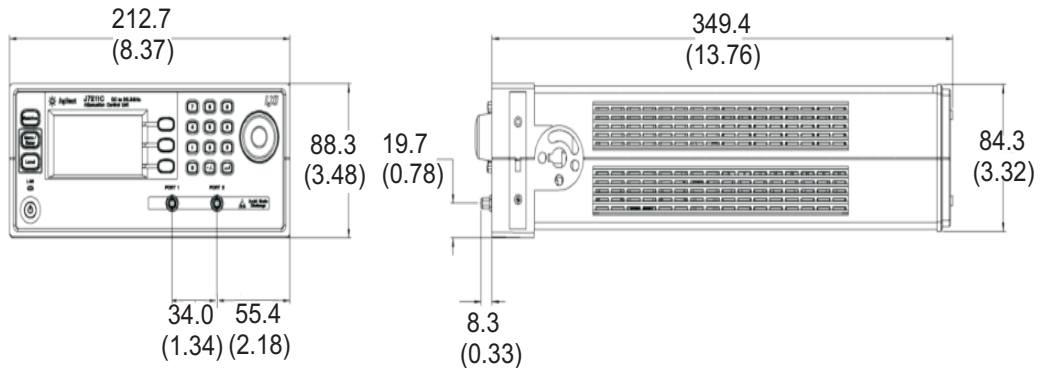


Figure 3-6 3.5 mm (f) connectors for J7211C without bumper kit and handle

Remote Programming Characteristics

Interface	GPIB interface operates to IEEE 488.2 and IEC65 10/100 BaseT LAN interface USB 2.0 interface
Command Language	SCPI standard interface commands
GPIB Compatibility	SH1, AH1, TO, TE0, L2, LE0, SR0, RL1, PP0, DC0, DT0, C0

Environmental Specifications

Agilent J7211A/B/C attenuation control unit are designed to fully comply with Agilent Technologies' product operating environmental specifications shows in table below.

Temperature:	
• Operating	0°C to +50°C
• Storage	-40°C to +70°C
Humidity:	
• Operating	95% RH at 40°C, 5 days cyclic
• Storage	90% RH at 65°C, 24 hours
• Condensing	95% RH at 40°C, 5 hours (condensation 15 minutes)
Shock:	
• End-user handling	Half-sine: 2-3 ms duration, 60 in/s (1.6 ms) delta-V
• Bench Handling	Per MIL-PRF-28800F
• Functional	Half-sine: 11 ms duration, 30 grms
• Transportation	Trapezoidal: 18-22 ms duration, 337 in/s (8.56 ms) delta-V
Vibration:	
• Operating	Random: 0.21G rms, 5 to 500 Hz, 10 min/axis
• Survival	Random: 2.09G rms, 5 to 500 Hz, 10 min/axis Swept-sine: 0.5G rms, 5 to 500 Hz, 10 min/axis
Altitude:	
• Operating	up to 4,572 meters (15,000 feet)
• Non-operating	up to 4,572 meters (15,000 feet)
ESD immunity:	
• Direct Discharge	8 kV per IEC 61000-4-2
• Air Discharge	20 kV per IEC 61000-4-2

Table 3-4 J7211A/B/C Environmental Specifications

Safety and Regulatory Information

Safety Considerations

This product has been designed and tested in accordance with IEC 61010-1:2001, Safety Requirements for Electronic Measuring Apparatus, and has been supplied in a safe condition. The Instruction documentation contains information and warnings which must be followed by the user to ensure safe operation and to maintain the product in safe condition.

Compliance With Electromagnetic Compatibility (EMC)

This product conforms with the protection requirements of EMC Directive 2004/108/EC for Electromagnetic Compatibility.

The conformity assessment requirements have been met using the technical Construction file route to compliance, using EMC test specifications EN 55011:1990 (Group 1, Class A).

In order to preserve the EMC performance of the product, any cable which becomes worn or damaged must be replaced with the same type and specifications.

Refer to the Declaration of Conformity

Compliance With German Noise Requirement

Acoustic Noise Emission This is to declare that this instrument is in conformance with the German Regulation on Noise Declaration for Machines.




- LpA < 70 dB
- Operator position
- Normal position
- per ISO 7779

Gerauschemission Laermangabe nach der Maschinenlaermverordnung- 3.GSGV Deutschland.

- LpA < 70 dB
- am Arbeitsplatz
- normaler Betrieb
- nach DIN 45635 t.19

Regulatory Markings

The following markings can be found on the rear panel.

	The CE mark shows that the product complies with all the relevant European Legal Directives.
ISM 1-A	ICES/NMB-001 indicates that this ISM device complies with Canadian ICES-001. Cet appareil ISM est conforme a la norme NMB-001 du Canada.
	The CSA mark is a registered trademark of the Canadian Standards Association. A CSA mark with the indicators "C" and "US" means that the product is certified for both the U.S. and Canadian markets, to the applicable American and Canadian standards.
ICES/NMB -001	This is the symbol of an Industrial Scientific and Medical Group 1 Class A product.
 N10149	The C-Tick mark is a registered trademark of the Spectrum Management Agency of Australia. This signifies compliance with the Australian EMC Framework Regulations under the terms of the Radio communications Act of 1992.

Declaration of Conformity

 Agilent Technologies	DECLARATION OF CONFORMITY According to EN ISO/IEC 17050-1:2004	
---	--	---

Manufacturer's Name: Agilent Technologies Microwave Products (M) Sdn. Bhd
Manufacturer's Address: Bayan Lepas Free Industrial Zone,
 11900, Bayan Lepas, Penang, Malaysia

Declares under sole responsibility that the product as originally delivered

Product Name: Attenuation Control Unit
Models Number: J7211A, J7211B and J7211C
Product Options: This declaration covers all options of the above product(s)

complies with the essential requirements of the following applicable European Directives, and carries the CE marking accordingly:

Low Voltage Directive (2006/95/EC)
 EMC Directive (2004/108/EC)

and conforms with the following product standards:

EMC	Standard	Limit
	IEC 61326:2002 / EN 61326:1997+A1:1998+A2:2001+A3:2003	
	CISPR 11:1990 / EN55011:1990	Class A Group 1
	IEC 61000-4-2:1995 / EN 61000-4-2:1995	4 kV CD, 8 kV AD
	IEC 61000-4-3:1995 / EN 61000-4-3:1996	3 V/m, 80-1000 MHz
	IEC 61000-4-4:1995 / EN 61000-4-4:1995	0.5 kV signal lines, 1 kV power lines
	IEC 61000-4-5:1995 / EN 61000-4-5:1995	0.5 kV line-line, 1 kV line-ground
	IEC 61000-4-6:1996 / EN 61000-4-6:1996	3 V, 0.15-80 MHz
	IEC 61000-4-11:1994 / EN 61000-4-11:1994	1 cycle / 100%

Canada: ICES-001:2004
 Australia/New Zealand: AS/NZS CISPR11:2004

The product was tested in a typical configuration with Agilent Technologies test systems.

Safety IEC 61010-1:2001 / EN 61010-1:2001
 Canada: CAN/CSA-C22.2 No. 61010-1-04
 USA: ANSI/UL 61010-1:2004



206349

This DoC applies to above-listed products placed on the EU market after:

10 July 2008

Date



Tay Eng Su

Quality Manager

For further information, please contact your local Agilent Technologies sales office, agent or distributor,
 or Agilent Technologies Deutschland GmbH, Herrenberger Straße 130, 71034 Böblingen, Germany.

Template: A5971-5302-2, Rev. E

J7211A_B_C

DoC Revision 1.0

Product Regulations

EMC

IEC 61326-1:2002 / EN 61326-1:1997+A1:1998+A2:2001+A3:2003

CISPR 11:1990 / EN 55011:1990 – Group 1 Class A

IEC 61000-4-2:1995 / EN 61000-4-2:1995 (ESD 4kV CD, 8kV AD)

IEC 61000-4-3:1995 / EN 61000-4-3:1996 (3V/m, 80% AM)

IEC 61000-4-4:1995 / EN 61000-4-4:1995 (EFT 0.5kV line-line, 1kV line-earth)

IEC 61000-4-5:1995 / EN 61000-4-5:1995 (Surge 0.5kV line-line, 1kV line-earth)

IEC 61000-4-6:1996 / EN 61000-4-6:1996 (3V, 0.15~80 MHz, 80% AM, power line)

IEC 61000-4-11:1994 / EN 61000-4-11:1994 (Dips 1 cycle, 100%)

Canada: ICES-001:2004

Australia/New Zealand: AS/NZS CISPR11:2004

Performance Criteria

B
A
B
B
A
B

Safety

IEC 61010-1:2001 / EN 61010-1:2001

Canada: CAN/CSA-C22.2 No. 61010-1-04

USA: ANSI/UL 61010-1:2004

Additional Information:

The product herewith complies with the essential requirements of the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC and carries the CE Marking accordingly (European Union).

Performance Criteria:

A Pass - Normal operation, no effect.

B Pass - Temporary degradation, self recoverable.

C Pass - Temporary degradation, operator intervention required.

D Fail - Not recoverable, component damage.

N/A – Not applicable

Notes:

Regulatory Information for Canada

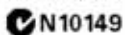
ICES/NMB-001:2004

This ISM device complies with Canadian ICES-001.

Cet appareil ISM est conforme à la norme NMB-001 du Canada.

Regulatory Information for Australia/New Zealand

This ISM device complies with Australian/New Zealand AS/NZS CISPR11:2004





4 Verification

Operator's Check for Local Operation	34
Recommended Test Equipment	34
Instrument Settings	35
Quick-Check Procedure	36

This chapter provides you simple instructions to verify Agilent J7211A/B/C attenuation control unit's functionality in local operation.

Operator's Check for Local Operation

Recommended Test Equipment

Table lists test equipment required for performance test verification and equipment troubleshooting. Equipment other than the recommended models can be used, provided minimum specifications are satisfied.

Instrument Type	Option
E8364B (10 MHz to 50 GHz Vector Network Analyzer; 2 port; 4 receiver)	014 & without UNL
N4691B (3.5 mm Ecal Module 300 kHz to 26.5 GHz)	00F
83059B (3.5 mm Thru Female to Female)	
N4690B (Type-N 50 ohm Ecal Module 300 kHz to 18 GHz)	00F
1250-1472 (Type-N Thru Female to Female)	

Instrument Settings

In order to perform quick test verification, the operator needs to ensure that instrument's settings are following recommendation settings as stated below.

Product Model	J7211A	J7211B	J7211C
Start Frequency	200 MHz	200 MHz	250 MHz
Stop Frequency	6 GHz	18 GHz	26.5 GHz
Number of points	30	90	106

CAUTION

ESD exceeding the level specified in [Table 3-4](#) may cause permanent damage to the instrument. Do not exceed the maximum RF power as indicated in [Table 3-1](#) and do not connect RF connectors to greater than ± 7 Vdc.

CAUTION

Do not connect measuring terminals to mains.

Quick-Check Procedure

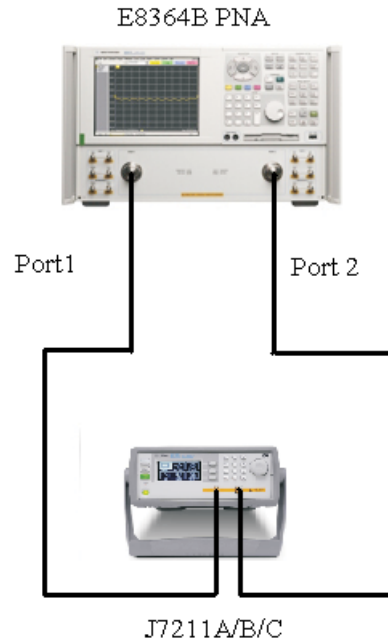


Figure 4-1 Quick-check Configuration for J7211A/B/C

Procedure

- 1 Calibrate the network analyser with full- 2 port calibration using the appropriate electronic or mechanical calibration kit.
- 2 Turn on J7211A/B/C and select “ATTEN” by using rotary knob. Refer chapter 5 “[ATTEN Menu](#) for more details on setting attenuation values.
- 3 Set attenuation value for example 0 to 40 dB and power level to - 17 dBm and IF BW is 30 Hz. For more details on E8364B's settings, refer *Agilent PNA Microwave Network Analyzers datasheet (5988- 7988EN)*.
- 4 Measure S12, S21, S11 and S22 and compare result against [Table 3- 1](#).



5 Local Operation

Getting Started with J7211A/B/C 38

"Turn on J7211A/B/C" on page 38

Main Menu of J7211A/B/C 39

"PROG Menu" on page 39

"ATTEN Menu" on page 44

"CYCLE Menu" on page 46

"IO Menu" on page 47

"INFO Menu" on page 47

"UTILITY Menu" on page 49

"Relative Menu" on page 51

This local operation chapter explains some simple steps how to use the J7211A/B/C in local operations. Besides that, functionality of all menus are described to provide easy-to-use operations using J7211A/B/C.



Getting Started with J7211A/B/C

Agilent J7211A/B/C attenuator control unit can be easily configured to drive your DUTs via the front panel operations. This section will equip you with fundamental knowledge and guide you through the configuration of J7211A/B/C.

Turn on J7211A/B/C

- 1) Connect AC power supply to J7211A/B/C. You should observe:
 - the background LED of the power button is red which illustrates that J7211A/B/C is in standby mode.
- 2) Press once on power button to turn on the J7211A/B/C.
 - The power button will turn green and the backlight of LCD screen will turn on simultaneously.
 - The attenuators will undergo a self check mode. At this point you will hear a buzzing sound as a result of self-check in progress. Please note that this is not a defect.
 - Once the self check completes, the selection menu will be displayed on the LCD screen.

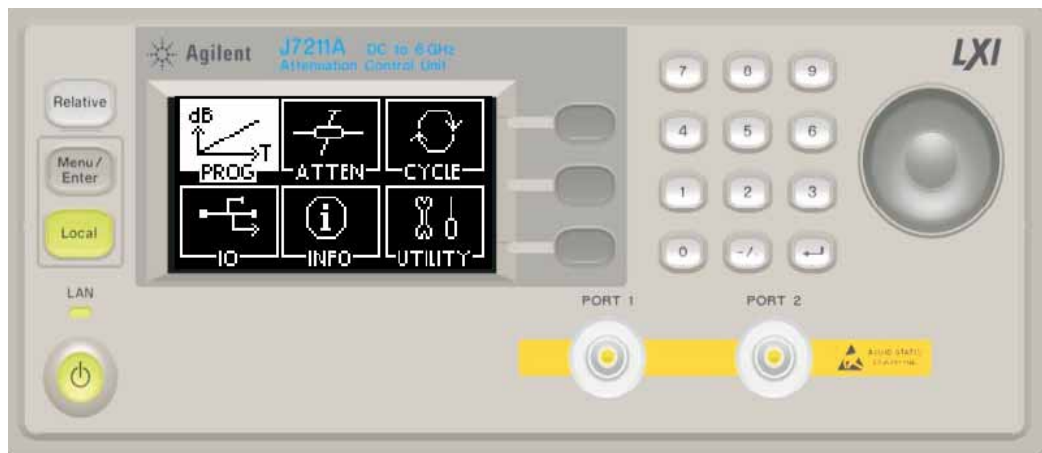


Figure 5-1 J7211A/B/C Main Menu

- 3) The **Local** button is lighted up and front panel operation is ready.
- 4) You may begin using the J7211A/B/C.

Main Menu of J7211A/B/C

The main menu comprises of six submenus, each with their own functionality and are described in this section. You can always return to the main menu as in [Figure 5-1](#) by pressing the **Menu/Enter** button.

PROG Menu

This PROG menu offers a customized and flexible configuration for the user. The user is able to choose the start and stop values of attenuation including the step size attenuation. The user can also choose the number of points and dwell time for the attenuator.

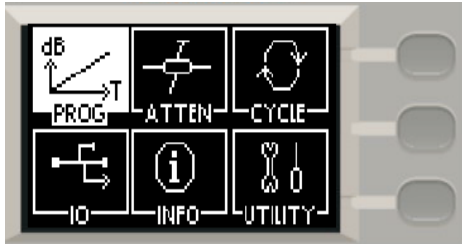
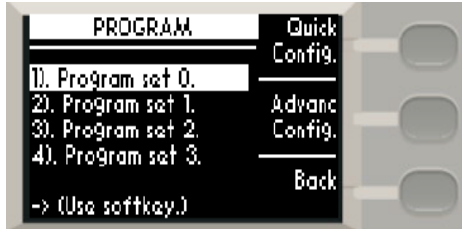
The delay start is another feature for this attenuation control units as this feature is suitable when it is used in a production or testing environment where accurate timing is significantly required.





If the user requires a continuous cycling, J7211A/B/C provides this capability by selecting continuous sweeping with appropriate dwell's time.


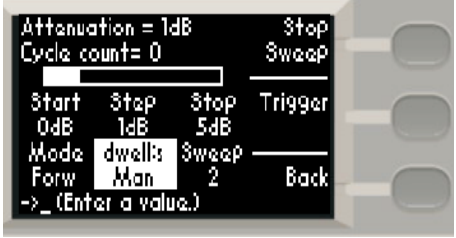

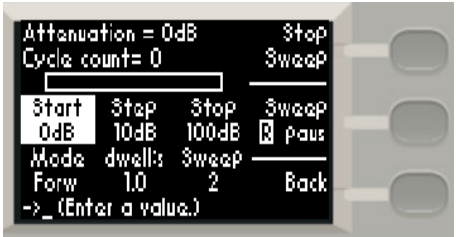
NOTE

For continuous cycling, the minimum sweep time is set to 1s.

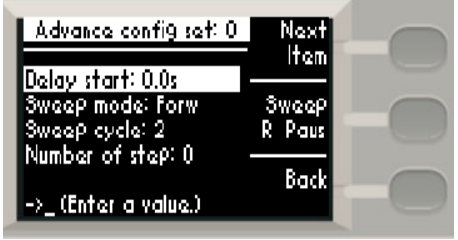
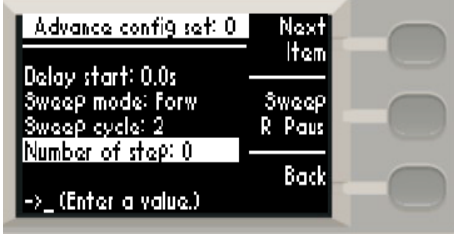

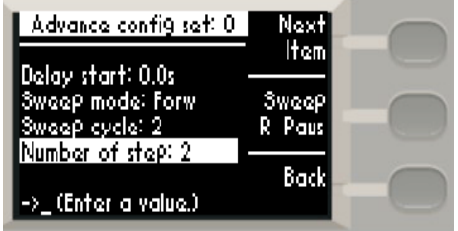
To configure for quick configuration:-



Function	Action	Illustration
Configuring delay start; start/stop attenuation and step size; dwell's time and sweeping option.	<ol style="list-style-type: none"> 1 Navigate to PROG icon and press once on Menu/Enter button. 2 This screen shows 4 Program set (0-3) which enable user to store the specific configuration up to 4 sets of program. E.g. The illustration shows that the configuration is save to Program set 0. 3 Press once on Quick configuration softkey. 	 

Function	Action	Illustration
	4 This screen shows attenuation value (0 dB); delay start time (0.0s); start (0 dB); stop attenuation (100dB) and step size (10dB).	
	5 Scroll thru the options by using softkey Edit Next.	
	6 E.g. The illustration shows that the J7211A/B/C is set to 1 dB step size by pressing Edit Next softkey to highlight Step and key in the value thru keypad or rotary knob.	
	7 You may also configure 2 kind of mode of operation such as Forw and F+Rev. Forw functions this instrument to sweep up from start attenuation to stop attenuation to complete 1 cycle. Whereas for F+Rev (forward and reverse), it will sweep from start attenuation to stop attenuation and reverse from stop attenuation to start attenuation to complete 1 cycle.	
	8 Next setting option is dwell time which range from 0.1s to 10s. E.g. Dwell time is set as 1.0s thru keypad or rotary knob.	

Function	Action	Illustration
	9 You may also choose manual dwell time, Man . To sweep attenuation manually, press Trigger softkey. E.g The illustration shows stop attenuation is set to 5dB and current attenuation display 1dB and trigger sweep manually by pressing on Trigger softkey.	
	10 To stop sweeping, press Stop Sweep once.	
	11 Next setting option is number of sweeps. E.g. The illustration displays number of sweeps is 2. To cycle the attenuator, click once on Sweep softkey. Now, the symbol R is highlighted which indicates that J7211A/B/C is running.	
	12 You can also pause instrument's cycling by selecting paus . Press R to continue cycling.	
	13 To halt the cycling, press Stop Sweep softkey once.	
	14 Back softkey is directing you back to the previous menu.	
	15 The information as of last operation remains as illustrated and saved in program set 0 (S0).	

To configure for advance configuration:-

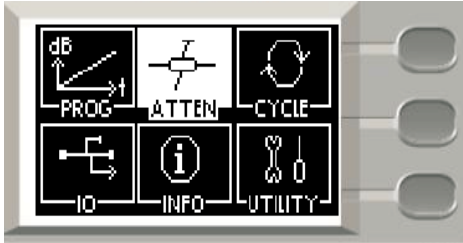
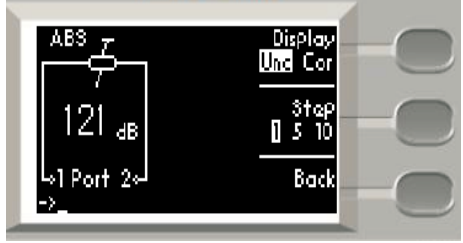
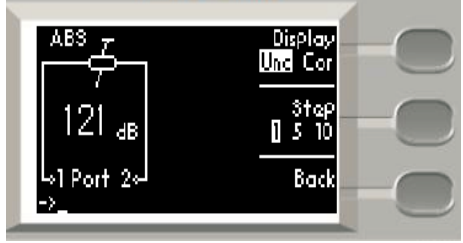
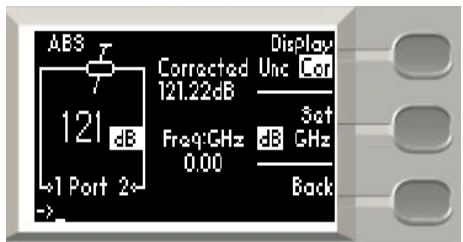
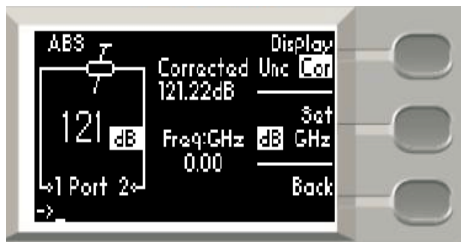
Function	Action	Illustration
Configuring delay start; start/stop attenuation and step size; dwell's time and sweeping option.	1 Maximum and minimum limits for Delay start, sweep mode and sweep cycle are set similar to quick configuration. Tune rotary knob to your desire values or enter value using keypad.	
	2 Press Next Item softkey to scroll from top to bottom of the setting options.	
	3 Initially Number of step is set at 0. Press Next Item softkey once and observe that no step is set (Atten and Dwell is blank).	
	4 E.g. Number of step is set at 2 by tuning the rotary knob or entering value via keypad.	

Function	Action	Illustration
	5 Observe that 2 steps appear and set your attenuation (ATTEN) and dwell time (Dwell).	
	6 E.g. Step 1 is set at 100dB attenuation and dwell time of 2s while Step 2 shows 20dB attenuation and dwell time of 0s.	
	7 The maximum number of steps is 20.	
	8 E.g. Illustration displays setting of Step 1-4 with different attenuations and dwell times.	
	9 The cycling of the steps will trigger line by line and sweep until the defined sweep cycles.	
	10 E.g. The step will sweep Step 1-4 for 2 cycles since sweep cycle is set as 2.	

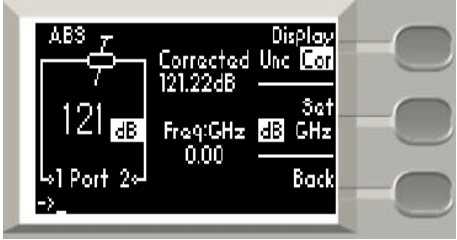
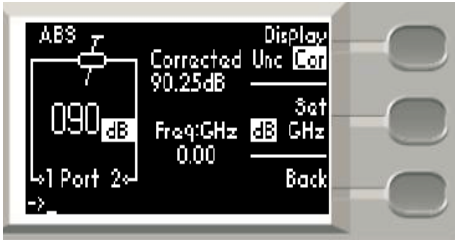
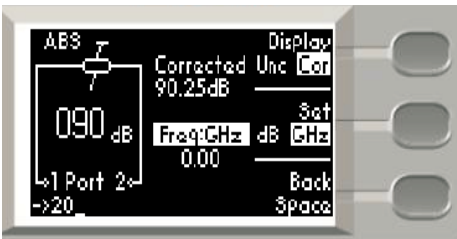
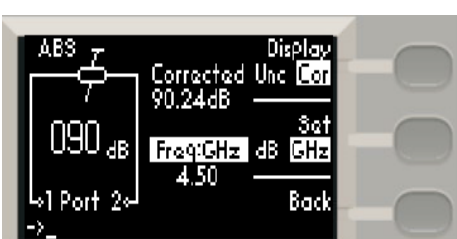
ATTEN Menu

The main function of this submenu is to provide manual attenuation during measurement. You can always choose to use corrected values if accurate and precise attenuation at particular frequency point is required. Multiple options for attenuation steps are available such as 1, 5 and 10 steps for your own choice and application.

To display uncorrected/corrected values:-

Function	Action	Illustration
Display uncorrected and corrected values	1 Navigate to the ATTEN icon using the navigation rotary encoder and press Menu/Enter button once.	
	2 In Unc screen, absolute attenuation value of 121dB is shown.	
	3 Press Display softkey once to change from Unc to Cor or vice-versa.	
	4 In Cor screen, it displays uncorrected (121dB) and corrected attenuation (121.22dB) value and frequency (0 GHz) which is variable and can be set.	
	5 Press Back to return to previous main menu.	

To select the frequencies and attenuation values:-

Function	Action	Illustration
Navigating and selecting attenuation values	1 Select Cor under Display using softkey.	
	2 Now, you observe attenuation accuracy is corrected to 2 decimal places. E.g. Corrected value of 121.22 dB in this case.	
	3 E.g. Enter digit 90 manually using keypad to select attenuation of 90 dB . Before setting 90 dB, ensure dB is selected by pressing the Set softkey.	
	4 Now, screen will show the setting of 90 dB with Cor and dB highlighted.	
	5 Press Set softkey once, GHz is chosen. Enter required frequency using keypad or rotary knob. E.g. Enter 4.5 GHz .	
	6 Now, 90 dB attenuation (shows 90.24 dB corrected value) and 4.5 GHz frequency are set.	

To select attenuation step:-

Function	Action	Illustration
Selecting attenuation step for suitable application	<ol style="list-style-type: none"> 1 Navigate to Step soft-key, press once from step 1 to step 5. 2 To follow the example shown, press twice to select step 10. 3 Then, turn rotary encoder anticlockwise once to see 111 dB display as a result of 10 dB step down from 121 dB. 	



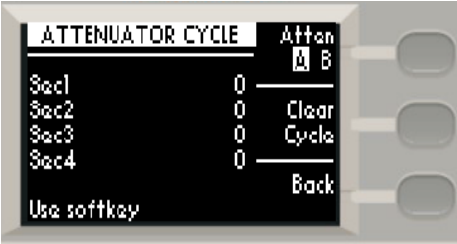
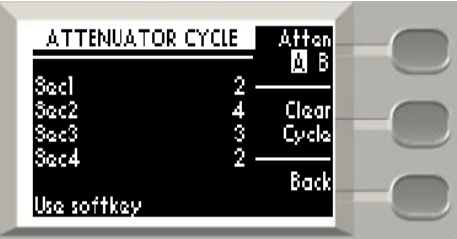
* Turn anticlockwise accordingly to obtain step down of decremental 10 dB such as 111 dB, 101 dB, 91 dB, 81 dB and so forth. Maximum attenuation level for J7211C is 101 dB.

CYCLE Menu

This submenu will show total number of cycles for each section of attenuators incorporated in J7211A/B/C.

To display or clear cycles of attenuators:-

Function	Action	Illustration
Displaying number of cycles for specific attenuators in J7211A/B/C	<ol style="list-style-type: none"> 1 Navigate main menu to CYCLE menu and press once on Menu/Enter button. 	

Function	Action	Illustration
	2 This screen ATTENUATOR CYCLE shows the cycles per section from Sec1 - Sec4 .	
	3 Illustrations display both attenuators such as Atten A and Atten B .	
	4 To delete all previous cycles count, click once on the Clear Cycle softkey.	
	5 A pop-up screen reminds you whether Attenuator A cycles needs to be clear.	
	6 Press OK softkey deletes all cycles count. All cycles noted as "0".	
	7 If Cancel is selected, original menu should prompt up as illustrated.	
		

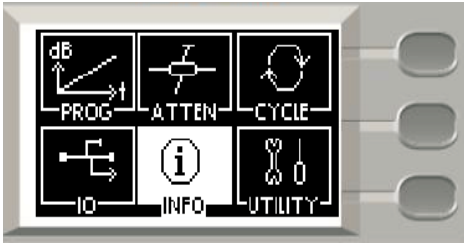


IO Menu

Refer to Chapter 7, "Remote Interface Configurations".

INFO Menu

All the system information for J7211A/B/C is displayed on this menu. User may retrieve all necessary information from here.

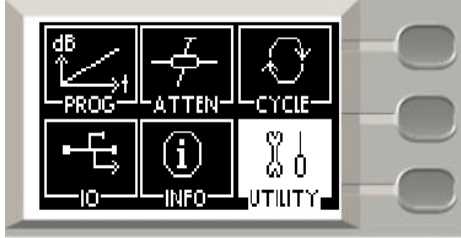
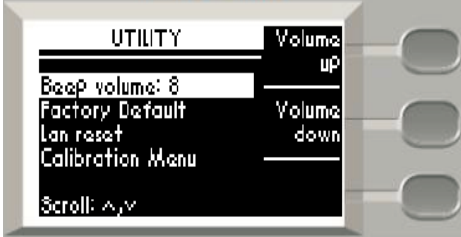
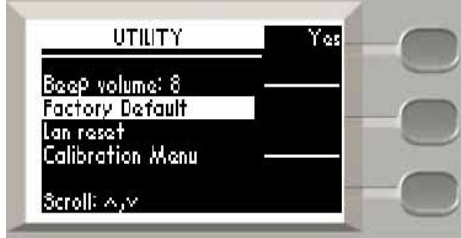
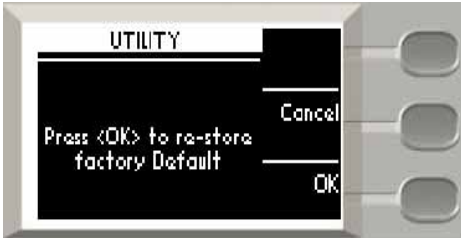
To display J7211A/B/C information:-

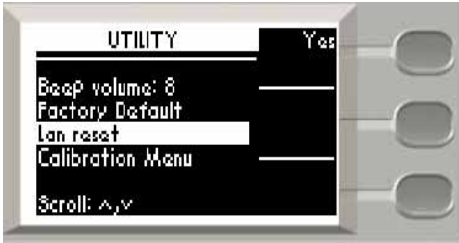
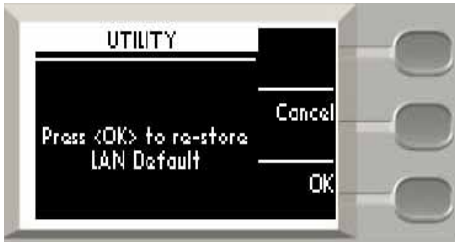
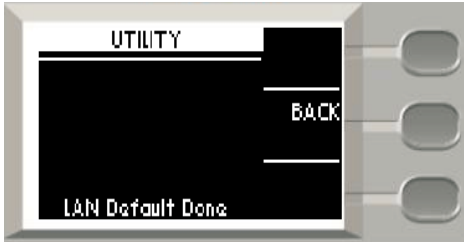
Function	Action	Illustration
Display system info for J7211A/B/C <ul style="list-style-type: none"> • Model • Serial number • Firmware revision • GPIB address • LAN IP • USB address • MAC address • FPGA revision 	<ol style="list-style-type: none"> 1 Press once on Menu/Enter button once INFO icon is selected as illustrated. 2 There are 2 pages of information for J7211A/B/C. Press Info softkey once to move to page 2 or vice-versa. 3 Press Back softkey to return to main menu. 	  

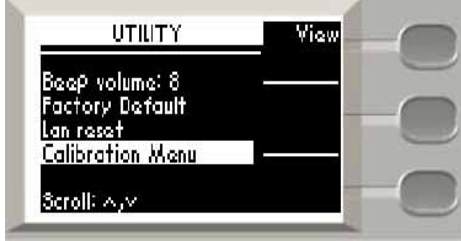
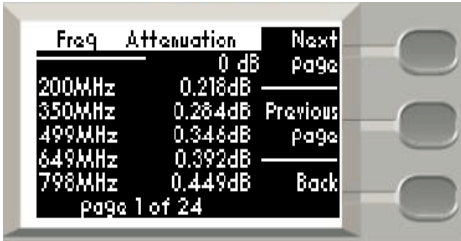
UTILITY Menu

There are information such as beep volume, factory default, LAN reset and calibration menu in this UTILITY menu.

To configure system utilities:-


Function	Action	Illustration
Display and adjust beep volume	<ol style="list-style-type: none"> 1 Navigate UTILITY icon and press once Menu/Enter button. 2 User can choose Beep volume to increase and lower the beep volume of the attenuation box by pressing the soft-keys Volume up or Volume down. 	 
To restore factory default setting for J7211A/B/C	<ol style="list-style-type: none"> 1 Scroll to highlight Factory Default. This option convert the J7211A/B/C into default setting. 2 Press Yes softkey once and OK for restoring factory default. Otherwise, press Cancel softkey for cancellation. 	 

Function	Action	Illustration
To reset LAN setting for J7211A/B/C	1 Scroll to LAN reset and Yes softkey is shown.	
	2 Press Yes softkey once and a screen prompt and enquire whether you want to restore LAN Default .	
	3 Press OK softkey to proceed and Cancel to go back to the previous menu.	
	4 If OK is selected, it appears a sentence showing LAN Default Done . Press BACK to return initial menu page.	


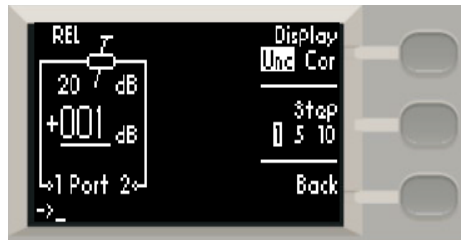
Function	Action	Illustration
Display cal data for J7211A/B/C	<ol style="list-style-type: none"> 1 Scroll down to highlight Calibration Menu and press Yes softkey once. 2 On display are all attenuation values at particular frequencies. 3 You can also flip by pressing Next page; Previous page; and Back to the main menu by using the softkeys. 4 Below of the screen show which page you are at and total pages for cal data. 	 

Relative Menu

This relative function enables the user to set the attenuation values relative to the absolute attenuation for specific application. The currently displayed attenuation is used as a reference value when this feature is turned on and user may set positive or negative attenuation values from the reference value. When relative function is disabled, the display returns absolute value of attenuation setting.

Function	Action	Illustration
Setting relative attenuation value	<ol style="list-style-type: none"> 1 In Atten, set attenuation desire using keypad. 2 Press Relative button once and button will turn green indicates relative feature is turn on. 	

5 Local Operation

Function	Action	Illustration
	<p>3 Notice that REL appears and value 20 dB is set as the relative attenuation.</p>	
	<p>4 Tune rotary knob to adjust the desired attenuation which will be relative to 20 dB attenuation value.</p>	
	<p>5 E.g. Currently the absolute attenuation is at 21dB.</p>	



6 Remote Operations

Configuring Remote Interface 54

“Interface Selection” on page 54

“GPIB Configuration” on page 54

“USB Configuration” on page 55

“LAN Configuration” on page 55

Programming Guide (SCPI) 56

“SCPI Command Syntax” on page 56

“Commands Relevant to J7211A/B/C” on page 56

Remote interfaces allow you to operate J7211A/B/C from remote place which makes this attenuation control unit a portable device. By understanding and learning these configurations, you can be more familiar on operating J7211A/B/C remotely and assist in setting up remote operation. This chapter also provides the programming guide for J7211A/B/C in SCPI commands.



Configuring Remote Interface

This section briefly describes how to configure the GPIB, USB and LAN remote interfaces.

NOTE

For more detail information on remote interface connectivity configuration refer to the Agilent Technologies USB/LAN GPIB Interfaces Connectivity Guide. If you have installed the IO Library Suite, you can access the Connectivity Guide via the Agilent IO Libraries Control icon. Alternatively, you can access the Connectivity Guide via the Web at: www.agilent.com/find/connectivity.

Interface Selection

You can choose to control the J7211A/B/C remotely using either the GPIB, USB or LAN interfaces.

For information on selecting and configuring the remote interface manually from the instrument front panel or remotely via virtual front panel, refer to Chapter 5, Local Operations.

NOTE

It is expected that most users will use the front panel keys to set up the remote interfaces. The remote interface commands are provided for completeness (for front panel operation).

GPIB Configuration

Each device on the GPIB (IEEE-488) interface must have a unique address. You can set the J7211A/B/C address to any value between 0 and 30. The J7211A/B/C is shipped with a default address set to 28. The GPIB address is stored in non-volatile memory and does not change when the J7211A/B/C is switched off or after a remote interface reset.

For information on setting the GPIB address manually via front panel operation, refer to “[Connecting Over GPIB](#)” on page 62.

USB Configuration

The USB interface requires no front panel or remote configuration. The USB is fixed and can not be changed - it is set at the factory and is unique for each J7211A/B/C.

NOTE

For further information on USB configuration, refer to ["Connecting Over USB"](#) on page 64.

NOTE

Before connecting the USB cable, make sure that I/O software is installed on your computer.

NOTE

For more information about Agilent I/O Libraries software refer to Connectivity Guide. If you have installed other I/O software refer to documentation that accompanies the software.

LAN Configuration

The J7211A/B/C has three LAN operating modes:

- Dynamic mode (Dynamic Host Configuration Protocol or DHCP)
- Auto IP mode (Local PC Control or isolated LAN)
- Static mode (Manual mode)

Refer to ["Connecting Over LAN"](#) on page to configure the above LAN operating modes.

Programming Guide (SCPI)

SCPI Command Syntax

The following conventions are used for SCPI command syntax for remote interface programming.

- Square brackets ([]) indicate optional keywords or parameters
- Braces ({}) enclose parameter choices within a command string
- Angle brackets (<>) enclose parameters for which you must specify a value
- A vertical bar (|) separates multiple parameters

Commands Relevant to J7211A/B/C

To Set Attenuation Level

The commands below are used to set attenuation level of attenuation control unit.

[INPut]:ATTenuation <numeric>

NOTE

If <numeric> is beyond the range specified, a return error value will be clipped to minimum or maximum attenuation value. You may encounter 2 error messages if value is not within range specified.

Error Messages:

- + 12, "Value clipped to Max"
- + 11, "Value clipped to Min"

The compatible remote command: ATTN <numeric>

[INPut]:ATTenuation?

NOTE

This command is to query current attenuation selected. This command confirms attenuation level before begin measurement.

To Increase and Decrease Attenuation Level

The following commands are used to increase or decrease attenuation value for attenuation control unit.

[INPut]:[ATTenuation]:INCRease [<numeric>]

[INPut]:[ATTenuation]:DECRease [<numeric>]

NOTE

To increase or decrease attenuation, <numeric> value needs to be entered. If no <numeric> value is stated, it will set to current step size or 1 dB initial step size (when unit power on). You may encounter 2 error messages if value is not within range specified.

Error Messages:

- + 12, "Value clipped to Max"
- + 11, "Value clipped to Min"

To Set the Step Size

The first command below allow user to set the step size for attenuation control unit. The second command validates current step size that is set on the instrument.

```
[INPut]:[ATTenuation]:STEPsize <numeric>
```

```
[INPut]:[ATTenuation]:STEPsize?
```

NOTE

The initial step size is set to 1 dB when the unit is power on. If step size is set to other values e.g. 10 dB, increase or decrease attenuation level is following 10 dB step size.

To Query Corrected Values

The command enable the user to query current corrected value.

```
CORRection? [<numeric>][<suffix>],[<numeric>][<suffix>]
```

NOTE

If *CORR? 25* is send, it will return 25 dB attenuation with the current frequency. While sending *CORR? 25,6GHz*, it will return the corrected attenuation at 25 dB at frequency of 6 GHz.

To Set Reference Attenuation Level

The command below sets the reference attenuation for attenuation control unit in relative attenuation mode.

```
[INPut]:[ATTenuation]:REFerence [<numeric>]
```

NOTE

If <numeric> value is not given, it will automatically reference to current attenuation as reference level.

To Enable Relative Attenuation

The first command below enables relative attenuation function. The second command is used to query current relative attenuation.

```
[INPut]:[ATTenuation]:RELative:[STATe] {ON | OFF | 1 | 0 }
```

```
[INPut]:[ATTenuation]:RELative:[STATe]?
```

To Set the Relative Attenuation Level

The command below set user desire relative attenuation.

```
[INPut]:[ATTenuation]:RELative:LEVel <numeric>
```

NOTE

This relative attenuation level will be referenced to reference attenuation level set earlier. If <numeric> is beyond the range specified, a return error value will clipped to minimum or maximum attenuation value. You may also encounter 2 error messages if value is not within range specified. If relative is not turn on, it will return error +13.

Error Messages:

- + 12, "Value clipped to Max"
- + 11, "Value clipped to Min"
- +13, "Not in relative mode"

To Check Number of Cycles Per Section

The first command checks number of cycles for individual section. The second command shows number of cycles for all sections. Following table lists numbers (1 - 8) representing each section of the attenuators.

```
DIAGnose:RELay:CYCLE? (@1,8)
```

```
DIAGnose:RELay:CYCLE? (@1:8)
```

Attenuator A		Attenuator B	
Sec 1	1	Sec 1	5
Sec 2	2	Sec 2	6
Sec 3	3	Sec 3	7
Sec 4	4	Sec 4	8

NOTE

The first command above returns number of cycles for Sec 1 for attenuator A and Sec 4 for attenuator B. Number of cycles for all sections will be displayed when second command is send.

To Display Required J7211A/B/C's Information

The following commands display information for selected request.

DISPlay:ATTenuation

DISPlay:IO

DISPlay:PROGram

DISPlay:CYCLe

DISPlay:INFormation

DISPlay:UTILity

6 Remote Operations



7 Remote Interface Configurations

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“Connecting Over GPIB” on page 62

“Connecting Over USB” on page 64

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“Selecting the LAN Network Type

“Auto Mode

“Manual Mode

Exploring the J7211A/B/C Web Interface Over LAN 70

“Launching the Web Interface” on page 70

“Navigation Bar” on page 71

“Displaying the Browser Web Control Page” on page 72

This chapter provides information and steps to achieve remote operations of Agilent J7211A/B/C attenuation control unit via GPIB, USB and LAN. It will also introduces J7211A/B/C web interface over LAN.



Connecting the J7211A/B/C to Your Computer

NOTE

To easily connect the J7211A/B/C to your PC, configure and verify your connection, you can use the Agilent IO Library Suite, the Agilent IO Libraries for Windows, or an equivalent.

- Agilent IO Libraries Suite for Windows 2000 Pro (SP4 or later)/XP Pro or Home (SP2 or later)/Vista (32-bit Business, Ultimate, or Enterprise). For information and to install, use the *Agilent Automation Ready CD with Agilent IO Libraries Suite*, which is shipped with the J7211A/B/C.
- You can find information and install this application via the Web at www.agilent.com/find/iolib.

NOTE

The procedures in this section are referring to the *Agilent Technologies USB/LAN/GPIB Interfaces Connectivity Guide*. If you have installed the IO Libraries Suite, you can access the Connectivity Guide via the Agilent IO Libraries Control icon. Alternatively, you can access the Connectivity Guide via the Web at www.agilent.com/find/connectivity.

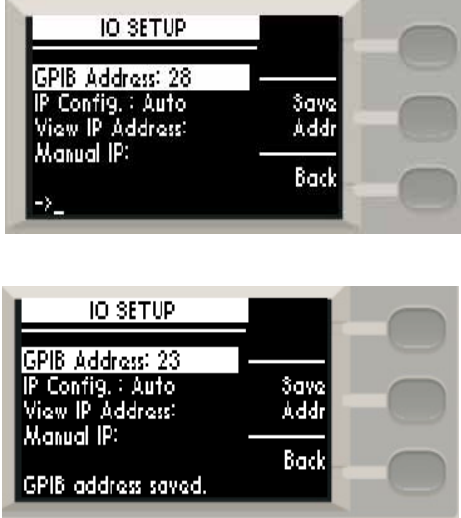
Connecting Over GPIB

- 1 Make sure you have installed the required I/O software on your computer.
- 2 Follow the instructions included with your GPIB interface card to install the GPIB hardware in your computer.
- 3 Connect the GPIB cable (*not provided*) between the computer and the J7211A/B/C.
- 4 Make sure power is applied to your computer and verify that the operating system is fully booted. Then, apply power to J7211A/B/C.
- 5 Configure your GPIB hardware as instructed by the documentation provided by the hardware vendor.
- 6 Use the *Connection Expert* utility of the Agilent IO Libraries Suite to add the J7211A/B/C and verify a connection.
- 7 The J7211A/B/C is shipped from factory with a default GPIB address of 28. To change the address, refer to the table below:

NOTE

If you have installed any other I/O software, refer to the documentation included with that software.

To change GPIB address:-

Function	Action	Illustration
Changing GPIB address (integer between 0 to 30)	1 Navigate using rotary knob to IO icon as illustrated and press once on Menu/Enter button to select.	
	2 Default address of 28 appears once you are at GPIB ADDRESS screen.	
	3 Scroll to change address by using rotary knob and press once on Save Addr softkey to save changes.	
	4 Once saved, sentence of "GPIB address saved" appears on the bottom of the screen.	
	5 Back softkey brings you back to the previous menu screen.	

Connecting Over USB

The USB interface requires no front panel configuration.

NOTE

Before connecting the USB cable, make sure that I/O software is installed on your computer. See "[Connecting the J7211A/B/C to Your Computer](#)" on page 62 for more information on installing the Agilent I/O Libraries software.

- 1 After I/O software is installed on your computer, connect a J7211A/B/C to your computer using a Type Mini B 5-pin USB cable.
- 2 Make sure power is applied to your computer and verify that the operating system is fully booted. Then, apply power to the J7211A/B/C.
- 3 The *Found New Hardware Wizard* will automatically start and guide you through configuring the J7211A/B/C as a USB device. To install the software automatically, accept all defaults.

NOTE

If you have installed the Agilent IO Libraries Software, this also install the required low-level software drivers. Therefore you do not need to insert the CD when the *Found New Hardware Wizard* instructs you to do so.

NOTE

If you have installed any other I/O interface software, refer to documentation included in that software.

- 4 Use the Connectivity Expert utility of the Agilent I/O Libraries Suite to verify that the J7211A/B/C is displayed under the USB interface.
- 5 Now you can use various programming environments to control the J7211A/B/C. For an overview on programming instructions via USB, refer to the *Connectivity Guide*.

Connecting Over LAN

The J7211A/B/C has two LAN operating modes:

- Auto mode
- Manual mode

Selecting the LAN Network Type

You can connect and configure your J7211A/B/C for site LAN or isolated (non-site) LAN operation.



- A *Site LAN* network is defined as a local area network (LAN) in which computers and LAN-enabled instruments are connected to a site LAN (workgroup LAN, Intranet, or enterprise LAN) via optional routers, hubs, and/or switches.
- A *Isolated LAN* network is defined as a local area network (LAN) in which computers and LAN-enabled instruments are **NOT** connected to site LAN.

Auto Mode

This mode is used when you are connecting J7211A/B/C via site LAN. In auto mode, the IP address, Subnet Mask, and Default Gateway values are obtained from the DHCP server or automatically assigned and the values can not be configured from the front panel.

- 1 Firstly, connect your computer and J7211A/B/C to LAN outlets using standard LAN cable.
- 2 Make sure power is applied to your computer and verify that the operating system is fully booted.
- 3 Apply power to J7211A/B/C and background LED color turns red, indicating standby mode.
- 4 Press once on the ON button and LED color turns from red to green.
- 5 After several minutes, LAN indicator will turns green which means LAN connection is established.
- 6 Then, the LCD screen displays 6 submenus.

To prepare J7211A/B/C for auto mode:-

Function	Action	Illustration
Select J7211A/B/C for auto mode	<ol style="list-style-type: none"> 1 IP Config is set default as Auto. 2 Check and confirm again the auto mode setting in View IP Address. 3 To check current LAN status, click once on LAN Status softkey. 4 Restart Netw. is use for you to start again on the network. 	 

Now you can use the J7211A/B/C Web Browser Interface to access and control the instrument. See “[Exploring the J7211A/B/C Web Interface Over LAN](#)” on page 70.

If you plan to program the instrument over LAN or use such programs, make sure you have installed the required I/O software on your computer.

Use the Connectivity Expert utility of the Agilent IO Libraries Suite to add the J7211A/B/C and verify a connection. When identifying the instrument, it is easiest if you use the IP address noted in above table.

NOTE

If you have installed any other I/O software, refer to documentation included with that software.




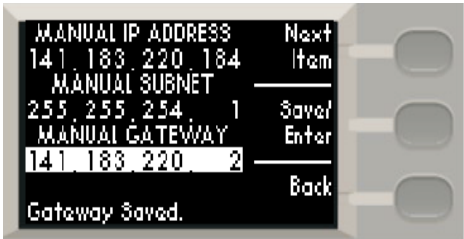
Now you can use various programming environments to control the J7211A/B/C. For an overview on programming instructions via USB, refer to the *Connectivity Guide*.

Manual Mode

In a manual mode, you must set up the IP Address, Subnet Mask and Default Gateway that is compatible with your network infrastructure. If it is not correctly setup, J7211A/B/C will not be visible on your network.

- 1 Firstly, connect your computer to J7211A/B/C using LAN cable.
- 2 Make sure power is applied to your computer and verify that the operating system is fully booted.
- 3 Apply power to J7211A/B/C and background LED color turns red, indicating standby mode.
- 4 Press once on the ON button and LED color turns from red to green.
- 5 After several minutes, LAN indicator will turns green which means LAN connection is established.
- 6 Then, the LCD screen displays 6 submenus.

To prepare J7211A/B/C for manual mode:-

Function	Action	Illustration
Select J7211A/B/C for manual mode	1 Navigate to IO icon and scroll to Manual IP for manual configuration.	
	2 Press Edit IP softkey once and now, you should enter MANUAL IP ADDRESS, MANUAL SUBNET and MANUAL GATEWAY .	
	3 To scroll from one row to another, press Next item once.	
	4 You are only able to key in by typing the whole address and click Save/Enter once before proceeds to another row.	
	5 Press BACK Space if you make an error while typing the address, subnet or gateway.	
	6 Bottom of the screen will always show once it has been saved.	

Now you can use the J721A/B/C Web Browser Interface to access and control the instrument. See “[Exploring the J7211A/B/C Web Interface Over LAN](#)” on page 70.

If you plan to program the instrument over LAN or use such programs, make sure you have installed the required I/O software on your computer.

Use the Connectivity Expert utility of the Agilent IO Libraries Suite to add the J7211A/B/C and verify a connection. When identifying the instrument, it is easiest if you use the IP address noted in above table.

NOTE

If you have installed any other I/O software, refer to documentation included with that software.

Now you can use various programming environments to control the J7211A/B/C. For an overview on programming instructions via USB, refer to the *Connectivity Guide*.

Exploring the J7211A/B/C Web Interface Over LAN

You can use the J7211A/B/C Web Browser Interface for remote access and control of the instrument via Java™ - enabled Web browser, such as Microsoft® Internet Explorer. Using the Web Interface, you can configure, monitor and troubleshoot your system remotely. This section provides an overview of the J7211A/B/C Web Interface.

NOTE

The following tasks assume you have configured the J7211A/B/C for LAN communication and have verified connection to a LAN network. See “[Connecting Over LAN](#)” on page 65” for more information.

Launching the Web Interface

- 1 Open your Internet browser from your computer.
- 2 From the **Tools>Internet Options** menu, navigate to **Connections** (exact navigation depends on your browser), and then select **LAN Settings**.
- 3 From **LAN Settings** dialog, select/activate bypass proxy server for local addresses (exact terminology depends on your browser).
- 4 Exit the **Options** window.
- 5 Enter the IP address of the J7211A/B/C in the Address Field and press return result icon. Use the J7211A/B/C’s front panel utility menu to read the IP address.
- 6 After entering the respective IP address, the J7211A/B/C Web Interface’s Welcome Window should appears.







NOTE

The procedures in this section will help you understand tasks commonly performed using the J7211A/B/C Web Interface. For additional help on using the interface, click Help with the Page tab on the lower-left corner of the Web Interface window.



Figure 7-1 J7211A/B/C Web Interface's Welcome Window

Navigation Bar

 Welcome Page	Welcome page Display various setting information
 Browser Web Control	Browser Web Control Virtual front panel and sending/reading SCPI commands
 View & Modify Configuration	View & Modify Configuration Displays and modifies various setting information
 Get Image	Get Image Receives image
 Print Display	Print Display Calls the printing function of the browser
 Help with this Page	Help with this Page Displays the Help file

Displaying the Browser Web Control Page

- 1 From the Welcome Window, click the **Browser Web Control** tab on the left side of the window.
- 2 You will notice a pop-up window, requesting for password.
- 3 Enter password (default password is “agilent”) and click submit.



Figure 7-2 Pop-up window for J7211A/B/C's Web Interface

- 4 You can view the virtual front panel of J7211A/B/C.



Figure 7-3 J7211A/B/C Browser Web Control Interface

- 5 Now, you can control this device remotely, similar to the front panel of the actual instrument.



8 Servicing the Attenuation Control Unit

Preparing a Static-Safe Workstation 74

"Reducing ESD Damage" on page 75

Maintenance and Adjustments 76

"Fuse Removal/Replacement" on page 76

"Adjustment" on page 76

This chapter will guide you on preparing a static- safe workstation and how to maintain your instrument in good condition.

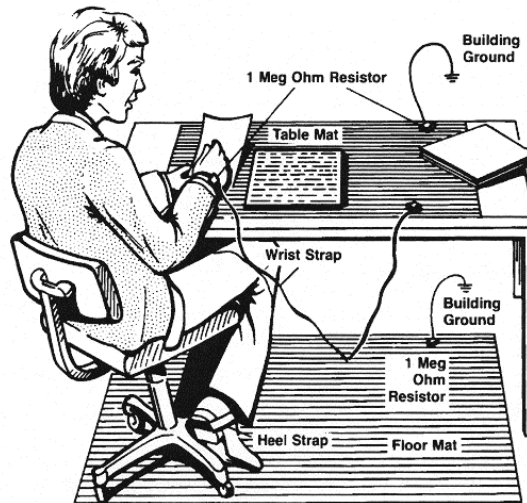
Preparing a Static-Safe Workstation

Electrostatic discharge (ESD) can damage or destroy electronic components. All works performed on assemblies consisting of electronic components should be done at a static- safe workstation.

An example of a static- safe workstation is shown below using two types of ESD protection:

- conductive table mat and wrist strap combination, and
- conductive floor mat and heel strap combination

The methods may be used together or separately. A list of static- safe accessories and their part numbers is given in table below.



Agilent Part Number	Description
9300-0797	Set includes: <ul style="list-style-type: none"> • 3M static control mat 0.6 m x 1.2 m (2 ft x 4 ft) • 4.6 m x (115 ft) ground wire The wrist-strap and wrist-strap cord are no included. They must be ordered separately.
9300-0865	Ground-wire, 4.6 m (15 ft)
9300-0980	Wrist-strap cord, 1.5 m (5 ft)
9300-1367	Wrist-strap, color black, stainless steel, without cord, has four adjustable links and a 7 mm post-type connection.
9300-1308	ESD heel-strap (reusable 6 to 12 months)

The above can be ordered by contacting any Agilent Sales Office.

Reducing ESD Damage

To help reduce the amount of ESD damage that occurs during installation, testing, or servicing instruments use the following guidelines:

- Be sure that all instruments are properly earth- grounded to prevent buildup of static charge.
- Personnel should be grounded with a resistor- isolated wrist- strap before touching the center pin of any connector and before removing any assembly from the instrument.
- Before connecting any coaxial cable to an instrument connector for the first time each day, momentarily ground the center and outer conductor of the cable.
- Handle all PC board assemblies and electronic components only at static- safe workstations.
- Store or transport PC board assemblies and electronics components only in static- shielding containers.
- PC board assembly edge- connector contacts may be cleaned by using a lintfree cloth with a solution of 80% electronics- grade isopropyl alcohol and 20% deionized water. This should be performed at a static- safe workstation.

Maintenance and Adjustments

Fuse Removal/Replacement

User maintenance is limited to replacement of the rear panel fuse. The main ac line fuse is located on the rear panel in the line power module.

Please ensure that the fuse is 250V, T3.15A.

Use the following procedure to replace fuse.

- 1 Remove fuse holder using a tweezer.
- 2 You will see two fuses - the one on the left is the active fuse and the other is backup.



- 3 Remove fuse and replace with one of the correct rating and type for your selected input ac line voltage.

NOTE

Be sure to select the correct fuse rating for the selected line voltage. Do not use repaired fuses or short circuited fuse-holders. To do so could cause a shock or fire hazard.

Adjustment

The J7211A/B/C attenuation control unit has no internal electrical or mechanical adjustments.