

OmniBER XM network simulator

Installation Guide

Agilent Technologies



Agilent OmniBER XM Network Simulator

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Notices

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CAUTION

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WARNING

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.

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Safety Precautions for the Operator

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

WARNING

No operator serviceable parts inside. Refer servicing qualified personnel.

To prevent electrical shock do not remove covers.

To prevent possible electric shock hazard, disconnect power cord before removing covers.

Power disconnect device is the appliance coupler (mains input cord). Do not position the instrument such that access to the disconnect device is impaired.

When installing into a rack or system, access may be impaired and must be considered as part of the installation, in the form of an easily accessible rack isolation switch, or similar.

Unused slots must be filled with blanking covers to ensure correct operation and cooling. Warranty void if blanking covers are not fitted.

Do not stack more than 8 free-standing chassis.

The Chassis is a Safety Class 1 Product (provided with a protective earthing ground, incorporated in the power cord). The mains plug shall only be inserted in a socket outlet provided with a protective earth contact.

Any interruption of the protective conductor inside or outside of the instrument is likely to make the instrument dangerous. Intentional interruption is prohibited.

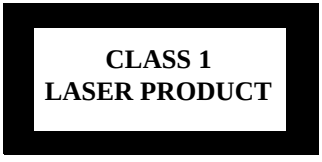
WARNING **If this instrument is not used as specified, the protection provided by the equipment could be impaired. This instrument must only be used in a normal condition (in which all means of protection are intact).**

Modules may become hot during use. Do not touch any of the components on a card as you remove it from the chassis.

CAUTION This instrument is designed for use in Installation Category II and Pollution Degree 2 per IEC 61010 and 60664 respectively.

Before switching on this instrument, ensure the supply voltage is in the specified range.

This instrument has an autoranging line voltage input, ensure the supply voltage is within the specified range.



CAUTION Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The laser classification label is located on the metalic top cover of each module adjacent to the serial number label.

Environmental Conditions

For indoor use only.

Safety Symbols

The following symbols on the instrument and in the user documentation indicate precautions you should take to maintain safe operation of the instrument.



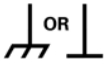
The Instruction Documentation Symbol. The product is marked with this symbol when it is necessary for the user to refer to the instructions in the supplied documentation.



This indicates that part of the equipment may be hot. Please refer to accompanying documenation for specific information.



Indicates the field wiring terminal that must be connected to earth ground before operating the equipment - protects against electrical shock in case of fault.



Frame or chassis ground terminal - typically connects to the equipment's metal frame.



Alternating current (AC)



This symbol indicates the position of the operating switch for ‘On’ mode.



This symbol indicates the position of the operating switch for ‘Off’ mode.



Indicates hazardous voltages.



This symbol indicates that a device, or part of a device, may be susceptible to electrostatic discharges (ESD) which can result in damage to the product. Observe ESD precautions given on the product, or its user documentation, when handling equipment bearing this mark.



The CE mark shows that the product complies with all relevant European Legal Directives.



The C-Tick mark is a registered trademark of the Australian Communications Authority. This signifies compliance with the Australian EMC Framework Regulations under the terms of the Radiocommunications Act of 1992.

ISM 1-A

This is a symbol of an Industrial, Scientific, and Medical Group 1 Class A product.

ICES/NMB-001

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, and indicates compliance to the standards layed out by them.

Warranty and service

Standard warranty is one-year module exchange.

Warranty and calibration plan extensions to 3 and 5 years can be provided.

Statement of Compliance

Electromagnetic Compatibility (EMC) Information

This product conforms with the protection requirements of European Council Directive 89/336/EEC for Electromagnetic Compatibility (EMC).

The conformity assessment requirements have been met using the technical Construction file route to compliance, using EMC test specifications EN 55011:1991 (Group 1, Class A) and EN 50082-1:1992.

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 specification.

Safety Information

This instrument has been designed and tested in accordance with publication EN61010-1(1993) / IEC 61010-1(1990) +A1(1992) +A2(1995) / CSA C22.2 No. 1010.1(1993) Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use, 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 instrument in a safe condition.

OmniBER XM at-a-Glance

NOTE

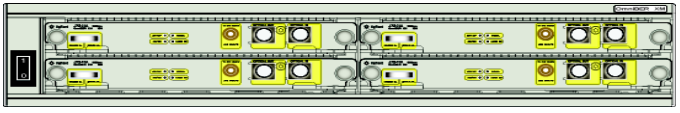
This guide describes **briefly** how to install the OmniBER XM network simulator. You will find full installation instructions in the *OmniBER XM User Guide* supplied on the CD-ROM.

The OmniBER XM network simulator has been designed to address the requirements of System Verification and Test for next generation SONET and SDH i.e.Optical Cross Connect, bandwidth managers and Optical Edge Devices. It also meets the needs of network simulation and inter operability testing.

Network Simulator Components

The network simulator consists of the following components:

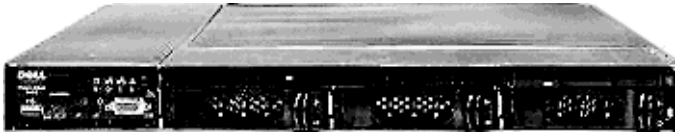
OmniBER XM Chassis and Modules



Two chassis area available the J7263A 4 slot chassis- holds up to 4 modules, and the E7912A 2 slot chassis - holds up to 2 modules.

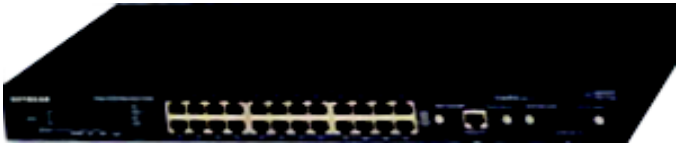
System Controller

You can use a laptop, or rackmount controller.



Full details of your system controller are in the documentation supplied with the system controller.

Switch



Full details of your switch are in the documentation supplied with the switch.

Install the network simulator Components

To install the test equipment, you will need to:

1. Set up the system controller
2. Set up the switch
3. Set up the chassis and modules
4. Connect the system components
5. Power up the system

When installing test equipment, be aware of the following:

Ventilation

CAUTION

Do not block any air vents. Leave a gap of at least 2 inches (50mm) around all air vents. The ambient operating temperature should be in the range +5° to +40° C

Rack Mounting

CAUTION

Have two people secure equipment to the rack.

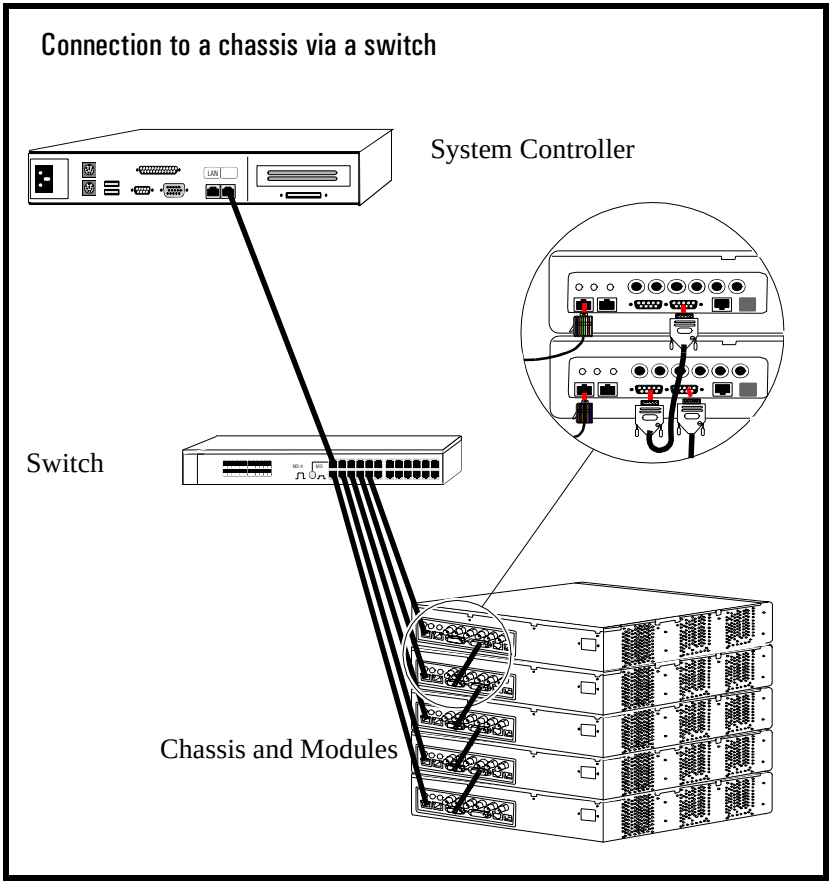
Avoid creating a top heavy rack.

- Install heavier equipment at the bottom.
- Install equipment from the bottom of the rack up.
- Use the anti-tip or anti-rolling mechanisms on the rack.
- If equipment is installed in a rack system the mains disconnect device (power plug on rear panel) may be inaccessible. In this instance the rack should be fitted with an emergency electrical isolation switch.

Bench Mounting

An alternative to rack mounting is to stack the controller, switch and chassis on a bench. (Stick the rubber feet provided, to the bottom of each piece of equipment to minimize slipping and scraping.)

Typical Configuration



Daisy chain together and connect to the controller using a LAN switch.

Step 1 - Set up the System Controller

The OmniBER XM supports several types of system controllers. A choice of rack-mountable or laptop system controller is available to suit the required application. They are as follows:

Product	Description	Application	No of LAN ports	Included Ethernet Hub size
J7258A	High Performance system controller (rack mountable)	High port/channel count, multiple users	2	24-port
J7258A-AQ2	flat panel monitor and keyboard (rack mountable)	High port/channel count, multiple users		
J7259A	System controller (rack mountable)	Medium port/channel count, multiple users	2	8-port
J7259A-AQ2	flat panel monitor and keyboard (rack mountable)	Medium port/channel count, multiple users		
J7257A	Laptop System controller	Medium port/channel count, Single user	2	8-port

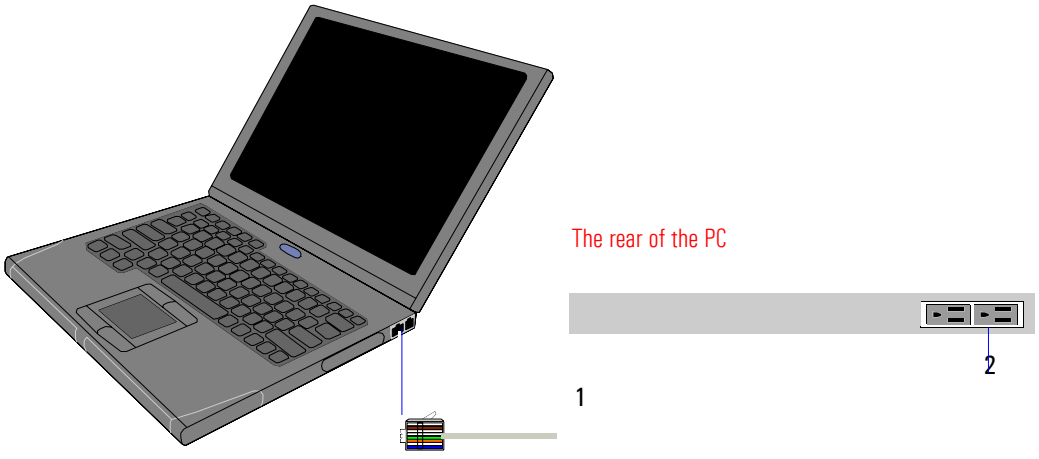
- Monitors are not included with rack-mountable controllers and can be ordered through option AQ2.
- Option AQ2 provides a flat panel monitor and keyboard in a 2U high rack-mountable drawer assembly.
- Rack-mount system controllers are shipped with Windows 2000 Server Edition, and laptop controllers with Windows 2000 Professional.
- Each controller includes an Ethernet switch. One controller Ethernet port is required to connect to the chassis and/or switch. The other controller Ethernet port can be used to connect the controller to an external LAN to allow multi-user access.

- The laptop system controller has an Ethernet port to connect to the chassis and/or switch, but the second port is is a PCMCIA LAN card which due to its limited bandwidth has poor performance for connection to a LAN. This port therefore is not recommended for remote control or multiple user applications. The PCMCIA LAN card does not provide enough bandwidth for direct connection to the chassis

Install an Antivirus application on system controller PC

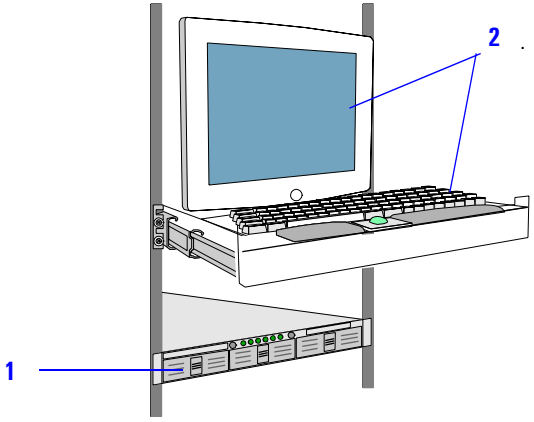
If your system controller is connected to a network, it is strongly recommended that you install an Antivirus application and keep the virus definition files up to date.

To set up a laptop PC



1. Connect the laptop's Ethernet port to a chassis, or switch. Refer to "Connecting the System Controller" on page 21 for cable information. If you connect the laptop to a single chassis you do not need to connect any other cables.
2. As needed, use the Universal AC adapter to plug the laptop into a power source.

To set up a rack mount PC



1 Mount the Controller.
If there are a number of rack mount options included with your shipment, refer to the Controller's *Rack Installation Guide* for instructions on which one is suitable for your system.

2 (*Optional*) If you have a rack-mountable monitor and keyboard, mount them in the rack. See the *Installation Guide* supplied for details.

Otherwise, connect your monitor and keyboard to the controller. The monitor should support a 1024 x 768 pixel area and 24-bit color.

NOTE

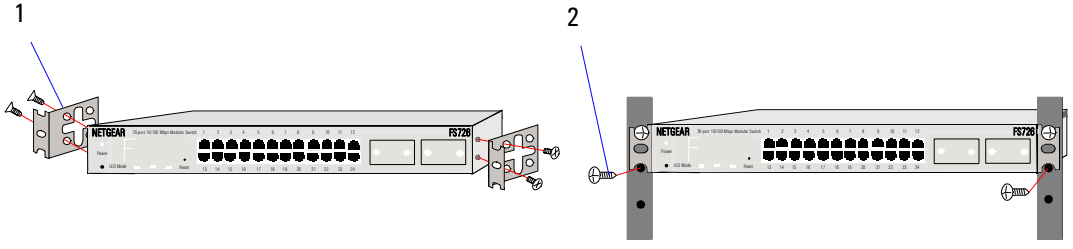
If you do not need a local console in the lab, use a monitor and keyboard temporarily, to set up the controller for remote access as described in the *OmniBER XM User Guide*.

Step 2 - Set up the Switch

You will have one of two switches, depending on the controller you ordered:

- Netgear FS108 switch (8 port)
  Supplied with the laptop or rackmount controller. (This switch is not rack mountable but can be placed on top of a chassis. Refer to the *Installation Guide* supplied with the switch for installation instructions.)
- Netgear FS726 switch (24 port)
  Supplied with the high performance rackmount controller.

To rack mount the 24 port switch



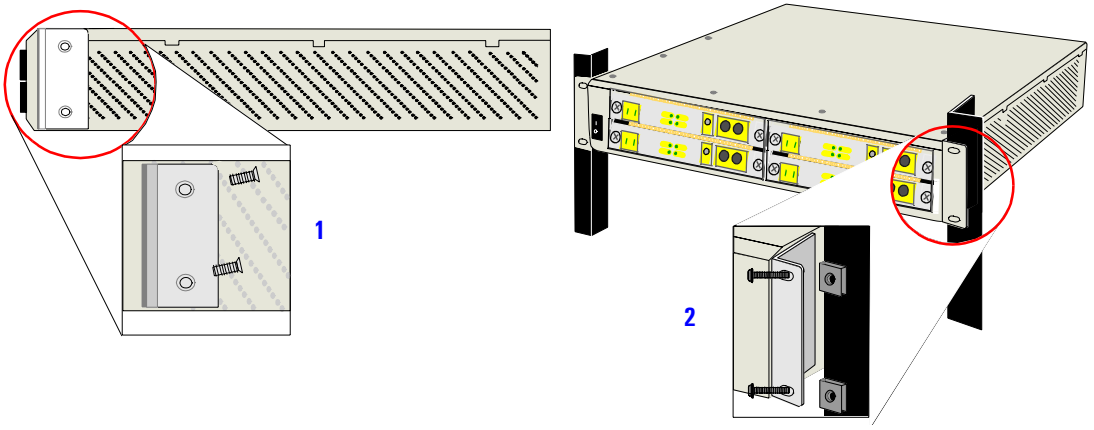
1 Secure two ears to each switch. The switch's ears are in its accessories bag. There are 4 x 10mm M4 cross-head screws.

2 Secure the switch to the rack using the 4 screws. Leave a gap above or below the switch to run cables from the front of the switch to the back of the modules and chassis.

NOTE The *Installation Guide* supplied with the switch has detailed installation instructions if required.

Step 3 - Set up Chassis and Modules

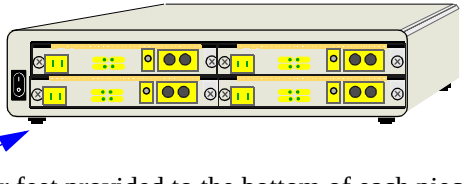
To rack mount a Chassis



1 Attach the mounting ears to each side of the chassis.

2 Holding the chassis in place, clip 4 nuts to the rack and secure the mounting ears to the front two posts.

To set up Chassis on a bench top

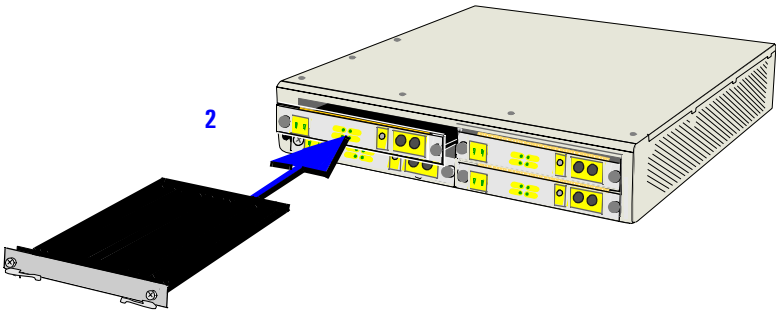


1 Stick the rubber feet provided to the bottom of each piece of equipment to minimize slipping and scraping.

Installing Modules in a Chassis

Static Electricity

CAUTION The connectors on the modules are sensitive to static electricity. To minimize electrostatic damage, please take the necessary anti-static precautions (for example, wear a wrist strap).



1. Remove the blanking plate from the slot you want to use. (You can use any slot, the order does not matter.)
2. Store the blanking plate for future use.
3. Line up the module with the slot, close the extractor levers and push the module into place. Finger-tighten the screw-locks.

Removing Modules from Chassis

1. Unscrew the screw-locks. Pull the extractor levers outwards then forward to remove the module.
2. Replace the removed module with a blanking plate. Ensure you insert the blanking plate into the chassis using the runners on the chassis otherwise you may damage the rear panel connectors.

CAUTION

ALWAYS replace a removed module with a blanking plate to ensure correct cooling of the chassis. NEVER operate a chassis with an empty slot. When inserting the blanking plate always use the runners on the chassis otherwise you may damage the rear panel connectors.

Be careful not to touch any of the components on the module. Place the module on a hard, flat surface. Never stack one module on top of another.

Step 4 - Connect the System Components

To connect the system components, you will need to:

- Connect the system controller to a switch
- (Optional) Connect chassis together
- Connect chassis to a switch

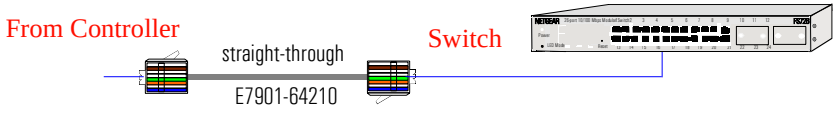
WARNING

Use the supplied power cords. They manage the required loads, provide an earth ground, and protect you from electric shock. Do not block access to a power cord or switch in case you need to disconnect power in an emergency.

Connecting the System Controller

System Controller to Switch

Connect the Controller and Switch with a straight-through LAN cable:



NOTE

The network simulator uses 10.x.x.x subnet addresses.

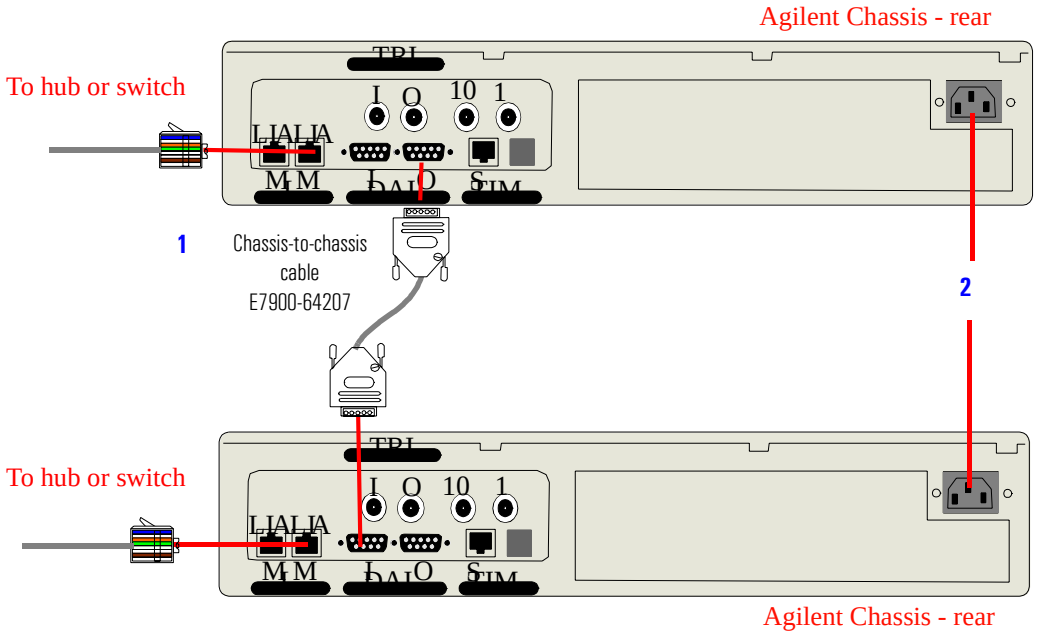
The Ethernet port that connects to the switch uses the IP address 10.0.0.1/8. The Controller dynamically assigns each test port an IP address from this 10.x.x.x subnet range. If 10.x.x.x addresses are used elsewhere, change the addresses to avoid conflicts.

Full details are in the *OmniBER XM User Guide*.

System Controller Peripherals

1. Connect the mouse, keyboard, and monitor
2. Connect the 10/100 Mb/s Ethernet port to the chassis or a 10/100 Mb/s port on the switch.
3. (Optional) Connect the 10/100 Mb/s Ethernet port to your LAN.
4. Plug the controller and monitor into a power source.

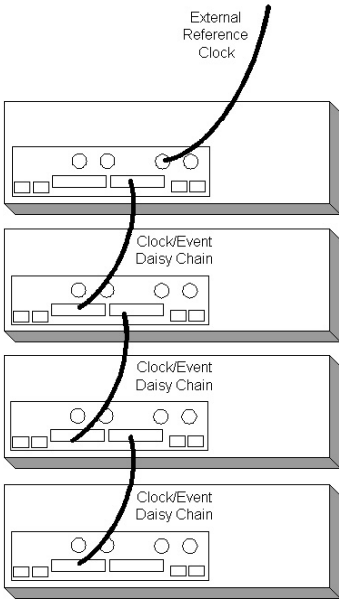
Connecting Agilent Chassis together



1. Daisy-chain the clock and event lines of the chassis by connecting the OUT port on the first chassis to the IN port on the next chassis. The first chassis in this daisy chain becomes chassis number 100, the second becomes chassis number 200, and so on.
2. Plug each chassis into a power source. For more information refer to “What are the power requirements of your configuration?” in the *OmniBER XM User Guide*.

External Clock Reference

An OmniBER XM system can comprise of multiple chassis, populated with multiple modules (four per chassis). By connecting the chassis together , via the event system cabling, you can synchronize the transmit clock on all modules to a common source. The choice for the clocks is always set up and connected to the first chassis in the system.

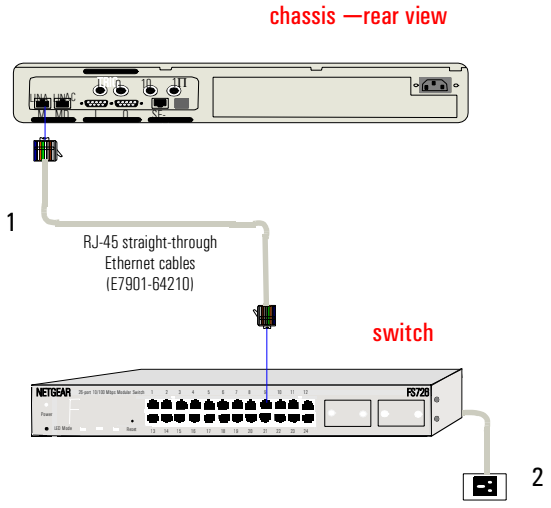


Only one external reference clock source should be applied to the chassis rear panel at any given time. If more than one clock source is applied during operation the chassis will lock to the first valid signal present. If more than one clock signal is present at re-boot the chassis will lock using the following order of preference:

Clock Input Port	Clock Signal
50 Ohm BNC	10 MHz reference clock
100 Ohm Bantam	1.544 Mbs BITS
75 Ohm BNC	2.048 Mbs MTS
75 Ohm BNC	2.048 MHz reference clock
Siemens 3-pin	2.048 Mbs MTS

Connecting Agilent Chassis to a Switch

NOTE Refer to the switch documentation for detailed switch information. Refer to the *OmniBER XM User Guide* for detailed chassis information.

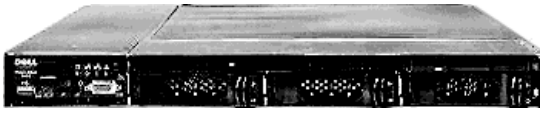


1. Connect the ethernet cables from the back of each chassis to the front of the switch. Use a straight-through cable from the MDI port, and a cross-over cable from the MDI-X port.
2. Plug the switch into the power source. Switches have no ON switch, and power up once plugged in.

NOTE The supplied switches are auto-sensing and detect whether the cables attached to them are straight-through or cross-over. They will auto-switch, performing the cross-over correction of data when it is necessary.

Step 5 - Power Up the System

1 controller - front view



Steps

1. Power up the controller.
2. On the controller, log in as user **Administrator**. The password is preset in the factory to be blank but you might need to change it to conform to company conventions. See “To change the password”section of the *OmniBER XM User Guide* for detailed information.
3. Power up each chassis using the power switch on the front of the chassis. Any modules in the chassis will boot up at this time. To avoid possible numbering problems, turn on the chassis in the order they are connected, leaving the chassis that is at the end of the event-line daisy-chain until last.

Using the Diagnostics tool

NOTE See the *OmniBER XM User Guide* for detailed diagnostic information.



1. Launch the Diagnostics Tool from the desktop icon (or from the Start menu).
2. Check that each module has a unique number.



3. Check that each module appears in the “Ready” state.
4. Check the system state. It will say “Ready” if all the modules are installed successfully.



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