



FourthRack[®] System - Chassis

Installation Guide

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Communications answers for the World Market

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Please Read SAFETY WARNINGS in section 5

1 Overview and general description

The FourthRack concept has been specified and developed to enable users of Fourthtrack Systems' products to lower their costs and simplify their operations. Fourthtrack Systems will be offering a range of additional Line Cards as part of the FourthRack product rollout.

1.1 The FourthRack Chassis

The FourthRack Chassis is a 2U 19-inch (rack width) system, with a depth of 270mm (330mm including IEC mains lead). It can be mounted with the front panel flush with the front of the rack system, or set back to a depth of 50mm, 75mm or 100mm.

It has fourteen Line Card slots and two power supply slots. The power supply slots are located one at each end of the chassis.

The FourthRack Chassis can be used with either a single power supply or dual power supplies for resilience.

Power, at five volts DC, is distributed throughout the FourthRack Chassis via a backplane. The backplane also supports two busses for the multidrop RS485 management communications functions; these extend to all 16 slots of the chassis.

The FourthRack Chassis is cooled by convection. Every Line Card, and the Management equipped Power Supply Cards, includes a temperature monitoring function. The temperature of each Line Card is monitored in by the Management System, with the parameters being linked to alarms if required.

1.2 Physical specifications

Dimensions: 440mm / 19 inch rack mount width (slides not included)
270mm depth (connectors excluded)
89mm / 2U in height

Capacity: up to 2 Power Supplies
up to 14 Line Cards

2 FourthRack Power Supply Options

- ◆ 110/230VAC 50/60Hz autoranging
- ◆ -48VDC
- ◆ 110/230VAC 50/60Hz autoranging with Management
- ◆ -48VDC with Management

2.1 Physical specification AC supplies

Position: The power supply can be installed in either power supply slot

Input: 110 to 230VAC 60/ 50 Hz nominal auto-ranging

Supply 2A @ 100V - 1.5A @ 230V

Connectors: Mains - IEC inlet
Serial port - RJ45 (managed version only)
Ethernet port - RJ45 (managed version only)
Alarm port (2 x no/c/nc) - screw terminals

2.2 Physical specification DC supplies

Position: The power supply can be installed in either power supply slot

Input: -40 to -60VDC*

Supply 5A @ -48Vdc*

Connectors: DC - input
Serial port - RJ45 (Managed version only)
Ethernet port - RJ45 (Managed version only)
2 x Alarm ports - screw terminals (Managed version only)

3 FourthRack Management System (Optional)

The FourthRack system is designed specifically to meet the needs of critical applications where system management is essential. The rack can be configured and monitored locally via an asynchronous serial port (Basic Management) or can be integrated into a more comprehensive management system via an Ethernet connection (Enhanced Management). See separate User Guide for full detail on the FourthRack system Management functionality.

3.1 Basic FourthRack Management Functionality

The basic FourthRack Management functionality is accessed via an asynchronous console port on the Managed Power Supply Card using a dumb terminal interface or terminal emulation program on a PC. In addition there are two dry contact relay outputs for major and minor alarms.

On power-up the console port interface provides an initial sign-on message and a summary status report of the rack configuration. This includes the type of Line Card fitted and their physical slot positions. The management system polls the Line Cards continuously and automatically reports any Line Card insertions or removals.

The polling function compares status messages from each Line Card / PSU with its previous status. A change in the status of a parameter can be mapped by the management software to the dry contact relay alarm functions.

A command line interface (CLI) can be opened to any of the Line Cards or modules that are installed in the rack. On opening the CLI to a particular Line Card an initial identification message will appear and then a summary status report of the Line Card configuration. The operating parameters of the Line Card can be changed via the CLI. Note. If the Line Card is set for 'Read Only' the changed parameters is not written to the Line Card's non-volatile memory and will be lost if the card is removed or powered down.

There is also a management configuration screen associated with each Line Card in the FourthRack Chassis. This screen displays the status parameters for the particular type of Line Card in the slot selected and allows the operator to select either major alarm, minor alarm or no alarm for each of the parameters. The selections are saved in non-volatile memory.

3.2 Enhanced FourthRack Management Functionality

The enhanced FourthRack management functionality is accessed via an Ethernet port on the Managed Power Supply Line Card, using parts of the industry standard Internet Protocol suite.

The enhanced FourthRack management functionality supports telnet access to the Command Line Interface of the management function and to the Command Line Interface of the Line Cards. It also supports two information presentation protocols, SNMP and an http: Browser Interface.

The SNMP function responds to 'get', 'get next' and 'set' messages. It issues a trap message when an alarm condition occurs. There are two types of trap message, one for major and one for minor alarms. These use the same criteria as the major and minor alarm dry contact relay outputs.

The http: Browser Interface provides a graphical representation of the FourthRack Chassis status, with the ability to click through to a display for a specific Line Card where the parameters for that card can be viewed and altered.

3.3 Management Resilience

The FourthRack Chassis can support the use of two management-equipped Power Supplies concurrently. The management-equipped Power Supply located in the left-hand power supply slot will automatically become the master and the other a stand-by. The Master Management System will report the status of the stand-by Management System. The stand-by Management System can be interrogated using either the console port, SNMP or the http: Browser Interfaces, but it operates only in a 'Read Only' mode i.e. no changes to operating parameters are supported by the stand-by Management System.

4 FourthRack Line Cards

The FourthRack system is designed to be configured with a variety of Line Cards. Additional Line Cards will be added as they become available.

4.1 FourthRack G.703 Line Card

The FourthRack G.703 Line Card is designed to be used in the FourthRack Chassis. It is a derivative of the highly successful MicroMux G.703.

The FourthRack G.703 Line Card is designed to enable the connection of data communication systems to carrier services, or private services, such as microwave links, that are presented as G.703 at 2Mbit/s. The standard model supports an X.21 DTE with 75-ohm un-balanced G.703 termination. The enhanced version can support both X.21 and V.35 DTE with 75-ohm un-balanced termination. Both versions are also available with 120-ohm balanced termination of the G.703 network connection.

4.2 FourthRack G.704 Line Card

The FourthRack G.704 Line Card is designed to be used in the FourthRack Chassis. It is a derivative of the highly successful MicroMux G.704 and MicroMux G.704x4. The Line Card supports a full range of Nx64k port speeds, with any variation / permutation of time slot assignments (so called Mx64k), using structured (channelised) G.704.

The FourthRack G.704 Line Card is a managed system. Card management is normally accessed via the FourthRack back plane and Management System. In addition, as in the original MicroMux G.704, the Line Cards also support "remote management" This enables remote configuration and management when used in structured G.704 mode. A FourthRack system can be loaded with up to fourteen FourthRack G.704 Line Cards for connection to the same number of remote MicroMux G.704 systems. The units at the subscriber sites can be managed directly from the FourthRack Management System.

5 Installing the FourthRack

In most cases, unless specifically requested otherwise, the FourthRack Chassis will be delivered without Power Supplies and Line Cards installed.

The FourthRack Chassis packaging contains the FourthRack Chassis, a pair of standard rack mount ears (with screws), and a copy of this manual.

The FourthRack Chassis can be used in desktop mode, but is usually fitted into a rack. The rack mount ears should be fitted using the screws provided. Fixings to secure the FourthRack Chassis within the rack are not provided and should be sourced from the provider of the rack to the appropriate specifications. The step at the rear at the rack should be on the top surface of the rack when it is mounted.

In line with standard racking practice, the chassis must be earthed.

SAFETY WARNINGS

The FourthRack must be permanently earthed to a suitable safety earth using the M5 Screw earthing point provided on the rear panel of the rack.

The rack is heavy! Please take care to avoid injury when handling. A full rack of cards / PSUs with packaging weighs up to 8.5Kgms.

STATIC DISCHARGE PRECAUTIONS

When handling Power Supply modules or Line Cards it is important to take precautions to avoid damage due to static discharge. The use of wrist straps is recommended.

If not available, the modules should only be handled by their front panels. Out of service Line Cards or PSU modules should either be stored in the rack or in their original anti-static packaging.

5.1 Installing Power supplies in the FourthRack

The power supply packaging contains the power module and a user guide. The AC supplies include a UK IEC mains lead and serial management cable if supported by the supply module.

The power supply can be installed in slot one (left hand) or slot 16 of the FourthRack Chassis. Remove the power supply from the packaging and orientate so that the silk screen can be read. Insert the power supply into the slot, locating the fibreglass of the circuit board into the card guides. Ensure that the power supply is squarely located and push the card home into the slot. Fix firmly in position using the two captive screws.

5.2 Installing Line Cards in the FourthRack

The Line Card packaging contains the Line Card and a use guide.

The Line Card can be installed in any slot from slot two to slot 15 of the FourthRack Chassis. Remove the Line Card from the packaging and orientate so that the silk screen can be read. Insert the Line Card into the slot, locating the fibreglass of the circuit board into the card guides. Ensure that the Line Card is squarely located and push the card home into the slot. Fix in position using the knurled thumbscrew fittings.

6 Accessories

Blanking panels are available to close off any unused PSU or Line Card slots. These are available in the following sizes:

PSU width
Single Line Card width
Triple Line Card width

7 Transportation

Please note. The original packaging supplied with the rack is designed for shipping either an empty rack or one configured with Line Cards and PSUs. Please retain and reuse the packaging for further transportation of the rack.

Shipping Weight 8.5Kg.