

System HD High Definition Modular Infrastructure

1U Enclosure with Passive Front Panel

Operating Manual

© March 2003

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Explanation of Safety Symbols



This symbol refers the user to important information contained in the accompanying literature. Refer to manual.




This symbol indicates that hazardous voltages are present inside. No user serviceable parts inside. This unit should only be serviced by trained personnel.

Safety Warnings



These servicing and installation instructions are for use by qualified service personnel only. To reduce risk of electric shock do not perform any servicing other than that contained in the Operating Manual unless you are qualified to do so. Refer all servicing to qualified personnel.

- **WARNING!** to reduce risk of electric shock do not expose this appliance to rain or moisture
- This equipment must be supplied from a power system providing a **PROTECTIVE EARTH**  connection and having a neutral connection which can be reliably identified.
- **WARNING!** this equipment has a high earth leakage current – earth connection essential before connecting supply
- The power outlet supplying power to the unit should be close to the unit and easily accessible
- **CAUTION!** A fully populated system HD enclosure is heavy. Appropriate manual handling precautions should be taken when lifting and handling, or, if possible, the unit should be unpopulated.
- Depending on configuration a populated system HD enclosure may contain laser sources and/or lithium batteries. Refer to the relevant module instruction manuals.

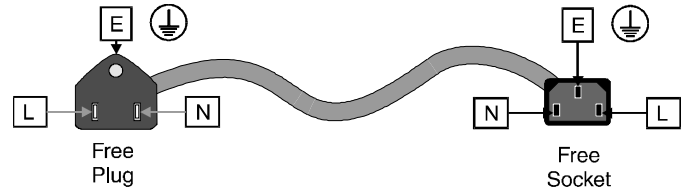
For equipment used in the USA

The equipment is shipped with a power cord with a standard IEC molded free socket on one end and a standard 3-pin plug on the other. If you are required to remove the molded mains supply plug, dispose of the plug immediately in a safe manner. The color code for the lead is as follows:

GREEN/YELLOW lead connected to E (Protective Earth Conductor)

BLUE lead connected to N (Neutral Conductor)

BROWN lead connected to L (Live Conductor)



- **Caution to reduce risk of electric shock plug each power supply cord into separate branch circuits employing separate service grounds**
- **Caution high leakage current. Earth connection essential before connecting supply**

Notices to installer:

- An equipment grounding conductor that is not smaller in size than the undergrounded branch circuit supply conductor, is to be installed as part of the branch circuit that supplies the equipment. Bare, covered or insulated grounding conductors are acceptable. Individually covered or insulated grounding conductors shall have a continuous outer finish that is either green, or green with one or more yellow stripes. The equipment grounding conductor is to be connected to ground at the service equipment.
- The attachment plug receptacles in the vicinity of the equipment are all to be of a grounding type, and the equipment grounding conductors serving these receptacles are to be connected to earth ground at the service equipment.

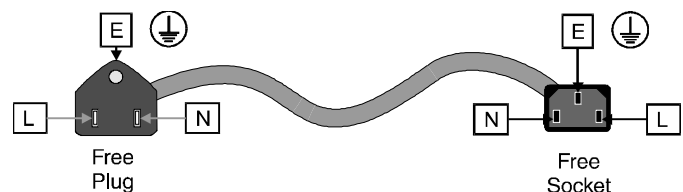
Power cable supplied for countries other than the USA

The equipment is normally shipped with a power cable with a standard IEC molded free socket on one end and a standard IEC moulded plug on the other. If you are required to remove the moulded mains supply plug, dispose of the plug immediately in a safe manner. The colour code for the lead is as follows:

GREEN/YELLOW lead connected to E (Protective Earth Conductor)

BLUE lead connected to N (Neutral Conductor)

BROWN lead connected to L (Live Conductor)



Rack Mounting the 1U Enclosure

The product must not be rack mounted using only the front rack ears. When rack-mounting the product, one of the following methods of installation must be used:-

- Place the unit on a suitably specified, and installed rack shelf and secure the product to the rack via the front rack ears or,
- Fit the unit using suitable rear rack mounts such as S&W P/N RMMCW 3560220Z + 8 x RMG1 M5x6PPZC. Both these items are available from Snell & Wilcox by quoting the order code FGACK RACK-MNT-KIT. The rear mounting brackets must be attached using the two M5 threaded inserts on both sides of the product; the maximum length of screw that can be used is M5 x 6mm. Ensure that the product is secured to the rack in all Four Corners.

Safety Standard

This unit conforms to the following standards:



BS EN 60950:1992 Specification for safety of information technology equipment, including electrical business equipment.

EMC Standards

This unit conforms to the following standards:

BS EN 55103-1 : 1997

Electromagnetic Compatibility, Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1. Emission

BS EN 55103-2 : 1997

Electromagnetic Compatibility, Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2. Immunity

Federal Communications Commission Rules Part 15, Class A :1998

EMC Environment

The product(s) described in this manual conform to the EMC requirements for, and are intended for use in, *either*

The commercial and light industrial environment (including, for example, theatres) E2

or

The controlled EMC environment (for example purpose-built broadcasting or recording studios), and the rural outdoor environment (far away from railways, transmitters, overhead power lines, etc.) E4

The applicable environment is stated in the Technical Profile section of the product operation manual under "*EMC Performance Information/Environment.*"

EMC Performance Information

Please refer to the *Technical Profile/Specifications* section of the product operation manual.

EMC Performance of Cables and Connectors

Snell & Wilcox products are designed to meet or exceed the requirements of the appropriate European EMC standards. In order to achieve this performance in real installations it is essential to use cables and connectors with good EMC characteristics.

All signal connections (including remote control connections) shall be made with screened cables terminated in connectors having a metal shell. The cable screen shall have a large-area contact with the metal shell.

COAXIAL CABLES

Coaxial cables connections (particularly serial digital video connections) shall be made with high-quality double-screened coaxial cables such as Belden 1694 or BBC type PSF1/2M.

D-TYPE CONNECTORS

D-type connectors shall have metal shells making good RF contact with the cable screen. Connectors having "dimples" which improve the contact between the plug and socket shells, are recommended.

Packing List

All System HD items are supplied in dedicated packing cartons provided by the manufacturer and should not be accepted if delivered in inferior or unauthorised materials. Carefully unpack the cartons and check for any shipping damage or shortages.

Any shortages or damage should be reported to the supplier immediately.

The System HD 1U Enclosure should come with the following items :

- System HD 1U Enclosure and Passive Front Panel
- 1 Power cable
- System HD 1U Enclosure Operators Manual
- This System HD 1U Enclosure Installation Manual
- System HD Modules as ordered (in separate boxes) with appropriate installation and operating sections for the manual sets.

Information Concerning this Manual

This manual contains information for the installation and configuration of the actual System HD 1U enclosure.

An installation manual is supplied for each module type that has been ordered and these should be included in the file that contains this manual.

Update/revision sheets should replace existing pages when supplied by the agent or Snell & Wilcox Ltd.

Note that the date at the bottom of the page is the release date of the current revision.

Manufacturers Notice

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Important Notice

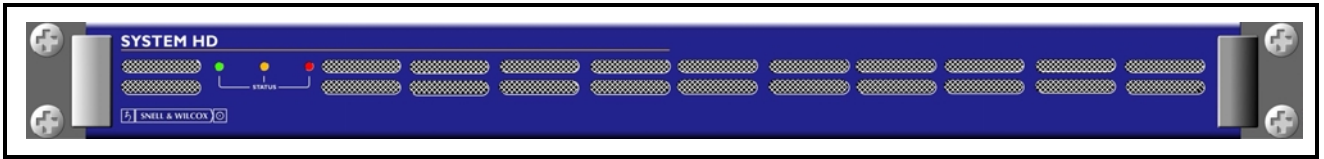
No responsibility is taken by the manufacturer or supplier for any non-compliance to EMC standards due to incorrect installation.

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The System HD Modular Rack



Introduction

The System HD rack system supports the exacting power, reliability and temperature requirements of HDTV Production, Post Production and Transmission Centres. It is specifically designed to provide support for very high density interconnect systems including multiple Optical Fibres which may also include Wave Division Multiplexing (WDM) options.

The System HD 1U enclosure is an assembly for up to three hot-pluggable System HD modules and a Control and Monitoring card.

The power consumption of the System HD modules are designed such that the 1U enclosure is always capable of operation using only the built in power supply. If the enclosure is not fully populated with modules, or the modules fitted are all low power, then the enclosure is still capable of operating.

The System HD 1U Enclosure supports the fitting of a Control and Monitoring board which supervises many aspects of the operation of the unit and provides many additional features.

Features

- Full RollCall™ support with Control and Monitor board fitted.
- All Modules and Control and Monitor board hot-pluggable.
- Extensive cooling.
- Full reporting facilities, including independent RollCall, RS232 with Control and Monitor board fitted.
- Active Power Management System with Control and Monitor board fitted.
- Especially suited to HDTV optical fibre systems.
- High density – can receive 3 plug-in modules in the 1U height.
- Strong construction which fully meets EMC requirements.

Note:

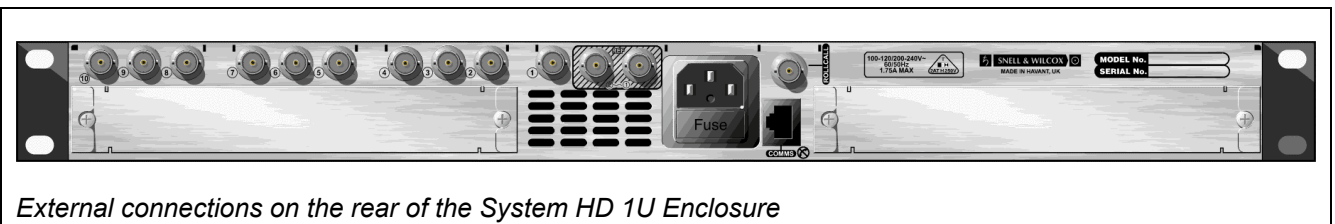
RollCall™ enabled for remote system control & monitoring.

External Connections to the System HD 1U Enclosure

CAUTION ...
The front panel must not be opened or rear covers removed by the Operator. Any internal activities required must be performed by a qualified engineer who should refer to the System HD Installation Manual.

All of the external connections to the System HD 1U Enclosure are made on the rear of the Enclosure.

The diagram below shows the connectors that are used.

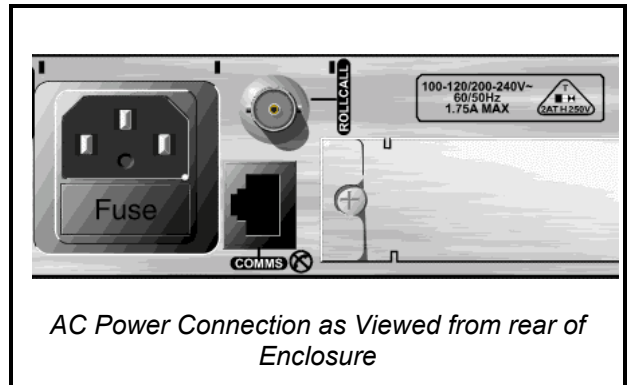


External connections on the rear of the System HD 1U Enclosure

Connecting AC Power

There is a standard IEC connector on the rear of the enclosure.

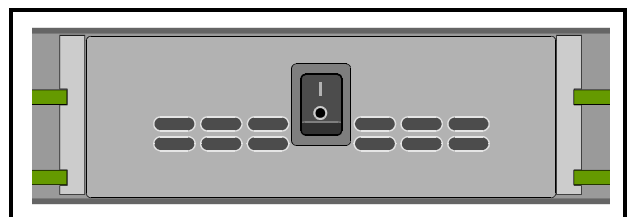
The IEC connector contains a 2.0A (T) fuse.



AC Power Connection as Viewed from rear of Enclosure

ON/OFF Switch

The enclosure ON/OFF switch is located in the middle of the unit inside the front panel.

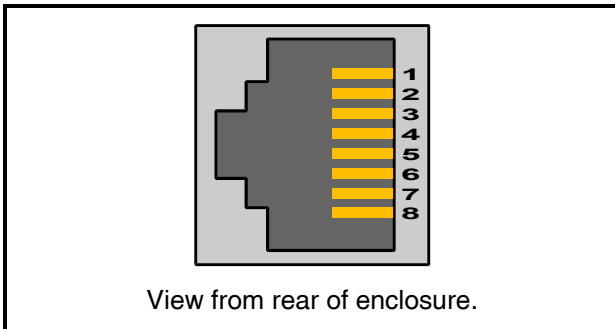


External Connections via RJ45 Connector

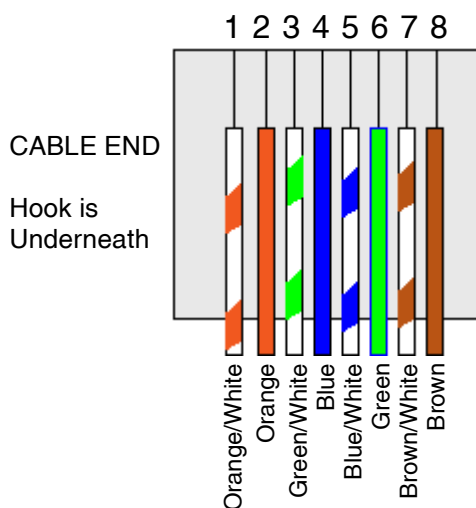
The RJ45 connector provides a RS232 serial link.


None of these is available unless a Control and Monitor board is fitted within the enclosure.

The uses and formats of the RS232 serial links are fully described in the Installation and Operators manuals for the Control and Monitor board.



Pin No.	Function
1	Not used.
2	Not used.
3	Not used.
4	Ground.
5	RS232 TX
6	Not used.
7	Ground.
8	RS232 RX

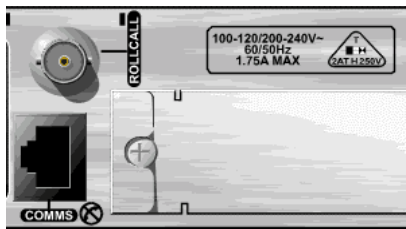


 **Warning** This connector is not intended for direct connection to a telecommunications network.

Connecting RollCall

A single BNC connector at the top centre of the rear panel allows the unit to be connected to co-axial segment the RollCall™ network communications system.

Note that this is only available if a Control and Monitor board is fitted within the enclosure.



RollCall™ BNC connector on rear of System HD 1U Enclosure

Overview of the RollCall™ Communications System and Computer Control System

RollCall remote control gives a uniquely powerful and flexible operating system that can be as simple as a single rack unit with control panel, or a powerful multi-master, multi-slave configuration with PC controllability for full station automation.

The RollCall command protocol derives control panel operating software from the individual unit being addressed. This unit could be an entire product or an individual module within a chassis. This unique feature ensures that updates or additions to individual units will not require control system software upgrades.

For units which support the RollCall option, all card edge, or other control functions are available on the remote control panel or any other controlling device. For some units there may be additional control functions and readouts that are available to the RollCall panel but will not be accessible via the card edge controls.

Note that for some units it may not be possible for the function selected locally to be disabled by the remote control mechanism. Under these circumstances a message will be displayed on the active remote control panel indicating that control is not available.

When a unit is powered-up it will normally assume the same set-up conditions that existed at the last power-down. This information is normally provided by the non-volatile memory within the unit, under the control of RollCall. Some units incorporate methods that allow other set-up conditions to exist on power-up. It is necessary to consult the information specific to each unit for details of such features.

Overview of the RollCall™ Network System

The RollCall system provides flexible and yet powerful remote control system. The units to be included within the system are joined via a high-speed network and each unit is a node on the network. Sufficient address space exists such that within a single network there can be a maximum of 240 nodes with any combination of control panels. In some cases a unit is an enclosure within which are many individual modules. For instance the System HD 4U Enclosure can contain up to twelve separate modules. Thus a theoretical network, consisting entirely of System HD 4U Enclosures, could be constructed to accommodate 2880 (240 x 12) System HD modules. Some other enclosures within the Snell and Wilcox range contain up to sixteen modules which could give rise to a maximum theoretical individual network capability of 3840 (240 x 16) modules.

The *actual* number of nodes on any individual network is physically limited by the load each connection places on the physical interconnection medium. The capacity of a network to support these connections is defined in terms of number of "Unit Loads" it can support. The documentation for all Snell and Wilcox products capable of connection to the RollCall™ network will indicate what number of "Unit Loads" they present to that network.

Network bridges can be used to connect any single network to up to 15 others nested up to 4 levels. A single controller can access up to $54241 (1 + 15 + 15^2 + 15^3 + 15^4)$ networks containing up to a total of 208 million $(3840-16) \times 54241$ IQ modules.

Connecting to Module Backpanels

WARNING ...

1. **Certain modules contain laser transmitters. Also, fibre-optic cables for connection may be active from other equipment.**
2. **Laser light can be damaging to the eyes. Optical fibres and Uniteres should be handled with great care.**
3. **System HD Modules which incorporate Fibre Optic elements, are designed for use with Class 1 laser systems only. Ensure that all inputs do NOT exceed Class 1 as doing so will impair the safety of the system and may result in damage to the equipment.**
4. **Active fibres should not be handled unless their source can be positively identified as not exceeding Class 1 limits.**
5. **Unused uniteres should always have their dust covers fitted.**

Connect the external HD signals to the rear panel of modules as described in the manual for the appropriate module. The symbols used on the rear panels are shown opposite.

Notes...

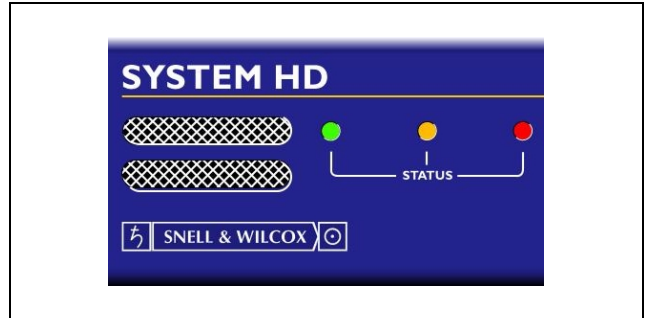
1. Laser uniteres have plastic covers to prevent the ingress of dust. These covers should only be removed when connecting optical fibres.
2. The ends of optical fibres should be cleaned with a liquid fibre cleaner, using a cotton bud, to ensure that there is no dust present, before they are plugged in (the uniter is polarised).
3. Observe the warning about not viewing live optical sources.

WARNING...

If an optical fibre breaks or is crushed, the splinters produced are very sharp and so extreme care should be exercised.

Switching On

Switch the power on and if a Control and Monitor board is fitted, check that the green front panel status indicator (top left) is illuminated and that the amber and red indicators are off.



Note...

If a Control and Monitor board is not fitted, none of the front panel indicator lamps will illuminate.

The functions of the front panel indicator lamps are as follows:

Red	Fault Condition
Yellow	Warning Condition
Green	Normal Condition



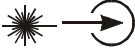


Fault Condition : This led indicates a 'FAULT' condition within the System HD Enclosure. This could be caused by either a Module, a PSU rail, etc reporting a major fault, i.e. falling out of normal operating conditions. This type of fault could be fatal to the operation of the System HD enclosure.

Warning Condition : This led indicates a 'WARNING' condition within the System HD Enclosure. This could be caused by either a Module, a PSU rail, etc reporting a minor fault. This type of fault isn't fatal to the operation of the System HD enclosure.

Normal Condition : This led indicates a 'NORMAL' condition within the System HD Enclosure.

Further information about a condition can be found using the Rollcall Logging software.

Symbols used on Interface Board Backpanels

Symbol	Description
	Coaxial input
	Coaxial output
	Optical input
	Optical output
	Connector not used
Black/white areas	Used to group associated inputs and outputs.

Specification

Size

The 1U enclosure dimensions are as follows:

Length: 531mm

Width: 482mm

Height: 45mm

At least 100mm should be allowed from the rear of the mesh exhaust cover for cable connectors and ventilation space.

Environment

Operational: 0°C to +40°C ambient with free air flow. Relative humidity 0% to 90% (non-condensing).

Storage: -30°C to +75°C.

Weight

With modules fitted approx: 9Kg.

AC Input

100V-120V / 200V-240V

50/60Hz [1.75A max].

Power Consumption

Less than 75W.

