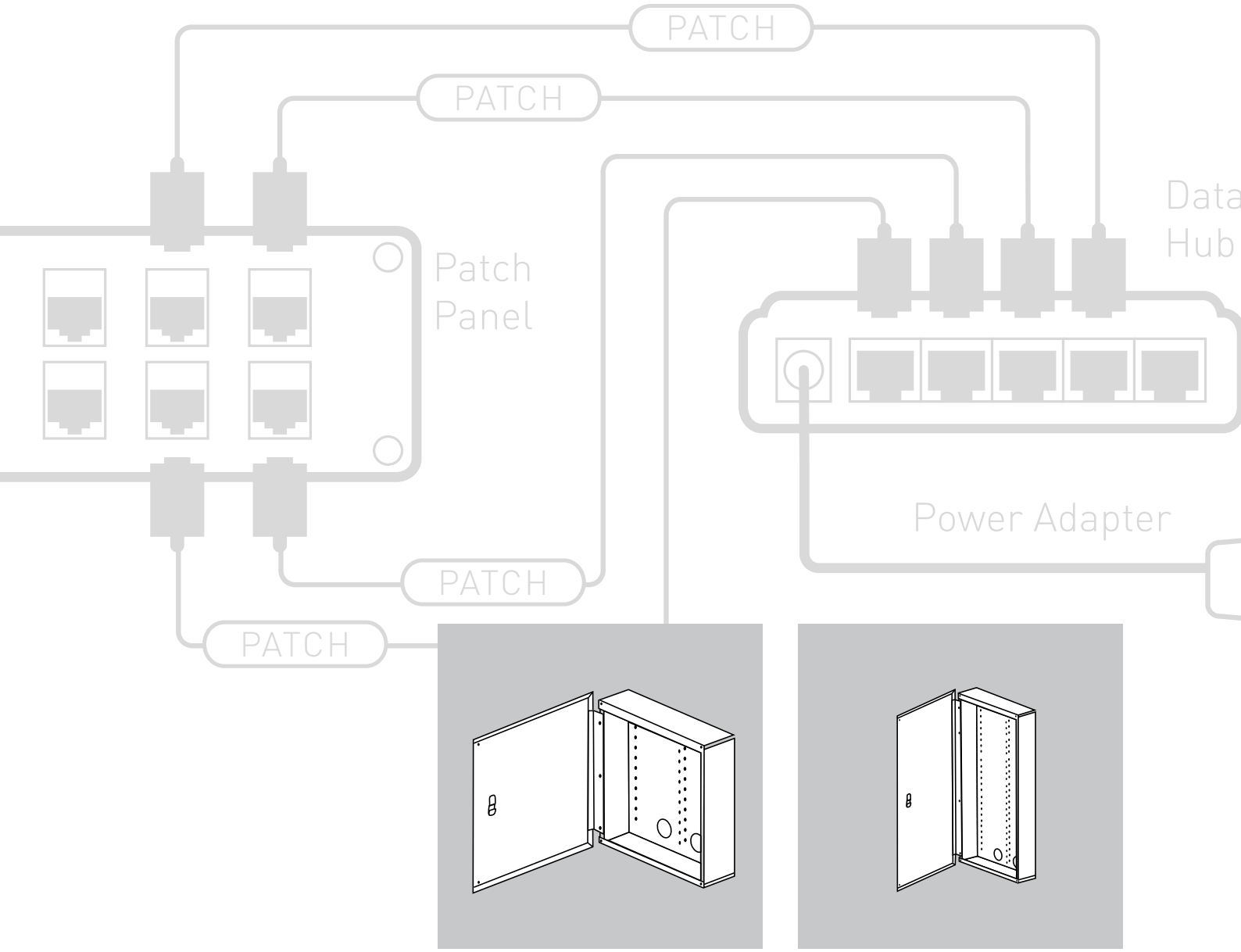
HPM Home Networks

Installation Manual



Contents

Preface

This installation manual covers most details regarding the planning, design and installation of HPM Home Networks. It shows system views of each application and the way equipment is connected together. It has detailed descriptions of features and functionalities of the products in the range.

In addition there are suggestions and tips on how to best install and utilize the products.

This manual, however, does not serve to be a comprehensive guide to installation of a home network system. It is the responsibility of installer to adhere to the standards and regulations that govern the installation practices and requirements for these types of products.

The relevant standards are included in, but not limited to, the list below.

- AS/NZS 3080 Telecommunications installations – Generic cabling for commercial premises
- AS/NZS 3085 Telecommunications installation – Administration of communications cabling systems
- AS/NZS ISO/IEC 15018 Information technology – Generic cabling for homes
- AS/NZS 1367 Coaxial cable and optical fibre systems for the RF distribution of analog and digital television and sound signals in single and multiple dwelling installations
- AS/NZS 3000 Electrical installation (known as the Australian/ New Zealand Wiring Rules)
- ANSI/TIA/EIA-570-A: Residential Telecommunications Cabling Standard
- ANSI/TIA/EIA-568-A: Commercial Building Telecommunications Cabling Standard
- ACA TS 008: Requirement for Authorized Cabling Products
- ACA TS 009: Installation Requirements for Customer Cabling (Wiring Rules)

Chapter 1

Introduction

Home Networks

Products in HPM Home Networks are designed to work in a building where Structured Wiring has been installed.

Structured Wiring is a wiring system that distributes signals such as Telephone, Video/TV, Audio, Data, or Infra Red throughout the house, wherever they are needed.

The HPM Home Networks range includes products that provide the following services.

- Incoming telephone lines are patched to intended locations around the home. Future rerouting of telephone lines can be carried out easily by user re-patching at the central hub.
- Video and TV sources such as free-to-air TV, PayTV, DVD player and security camera are delivered through one cable to all TV monitors in the home.
- Audio sources such as CD player, radio and MP3 player are piped through to all speakers throughout the building. Local control, including source selection, can be performed in the location of each speaker set.
- Computer equipments can be networked together for information and resources, including internet, sharing within the home.
- Infra-red remote control signals of most consumer electronic equipment can be transmitted from hand held unit to target equipment situated in a different room.

The HPM Home Networks range is based on a framework engineered, and partly manufactured, by Legrand's home networking specialist On-Q. On-Q is a global company that focuses heavily on innovation, research and development. The HPM range stands to benefit from On-Q's expertise now and in future developments.

Chapter 2

Planning

HPM Home Networks can only be installed in a home where an appropriate network of Structured Wiring is laid.

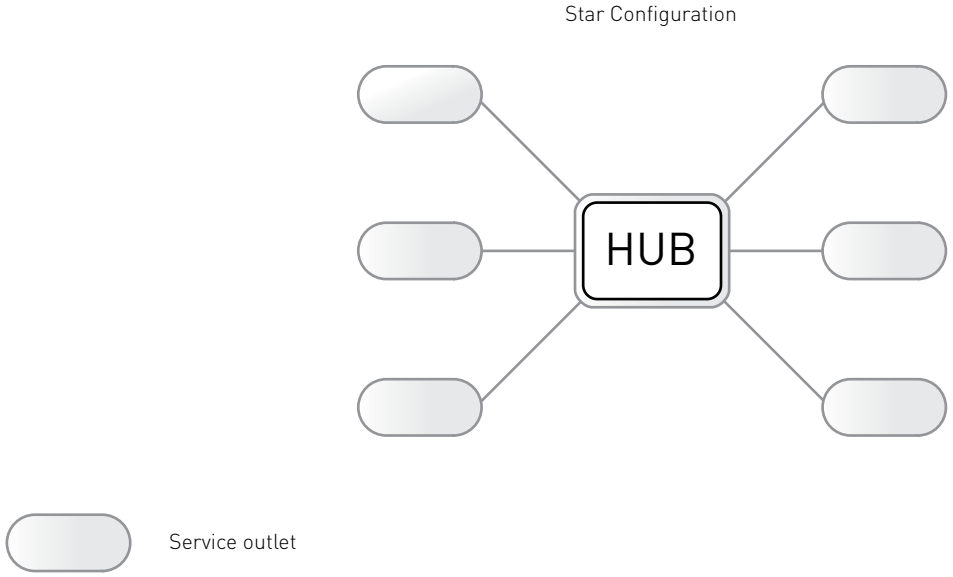
'Star' Configuration

Structured Wiring has a 'Star' configuration in its cable network. The 'Star' configuration allows all systems to be centralized in a chosen location, a hub. All cables are laid from this central point to all locations where services are required.

Each service outlet has its dedicated cable running from the central location, no tapping at mid run or looping in the configuration.

The types of cable required in the network depend on the services planned. Data category cable (Eg. CAT5e or CAT6) is used for telephone, data, audio and IR applications. Coaxial cable (Eg. RG6) is used for TV/video distribution. Figure 8 cable (speaker cable) is required for audio distribution from hub to speakers. Please refer to Chapter 4 to 8 for the required cables in the various systems.

Fig 2.1



Best Time To Install Structured Wiring

The Structured Wiring is best planned and laid out during the construction or major renovation phase of the premises. Cables can be run behind walls most economically and successfully during this phase. The appropriate wall outlet plates can be positioned and mounted in the best position without compromise. With proper planning all cable runs, with optimum routing, can be concealed behind walls.

It is not impossible to run Structured Wiring in an existing building. Usually the cost of cable laying in such an instance is higher than that in a building under construction. There might even be occasions when cables cannot be concealed totally behind walls. Wall outlet positioning might have to be compromised or a much longer route of cable is required.

Central Location Selection

The central location, where all cables radiate from, is where the network enclosure or hub is mounted.

For ease of installation and future end-user access, select a location with enough space not only for the size of the enclosure but also to accommodate a person's access.

The other considerations for the hub location are:

1) Where are the telephone line, TV antenna, PayTV and audio sources coming from?

2) Is mains power supply available nearby?

3) Are the cable runs minimized?

It is better to have a series of moderate length runs rather than mixture of short and long runs. Be mindful of signal degradation or signal loss due to extreme length of cable runs.

> **Tip:** Limits as a guide: CAT5e – 90m, Coaxial – vary depending on signal strength and quality, significant loss can be experienced over 50m.

Potential hub locations are utility closet, wardrobe, garage and under staircase.

The Design Plan

Proper planning is essential for a successful home network system.

1) Specify all the services required at each room throughout the building.

2) Determine the number of cables for each cable type (CAT5e, coaxial and speaker cables, if applicable) from the hub to each location to satisfy the specified services. Refer to the appropriate services sections in this manual for the required type of cable.

> **Tip:** Standard recommendation is to run minimum of 2 (two) category cables and 2 (two) coaxial cables to each room, if actual room requirements are unknown. But some high-use room will require more cables. For example, a study or home office will require more category cables for fax, PC and printer. An entertainment room will require more coaxial cables for reticulation of AV equipment back to the hub for distribution to other rooms in the house.
>
> **Tip:** Install more cables than required for future proofing.

3) It would help to draw up the design on the building's floor plan. Information such as outlet location in the room, routing path and cable length can be extracted from the plan.

4) The outlets should be conveniently situated near where the services are required. For example, in a bed room, the telephone outlet should be next to the bed and the TV outlet should be opposite to the bed. A power outlet should be installed close to a service outlet where power is required. For example the TV outlet should have a power outlet close by to supply power to a TV.

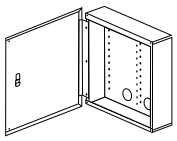
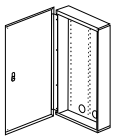
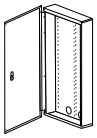
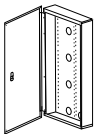
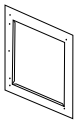
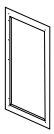
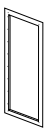
> **Tip:** It is recommended that the placement of outlets be planned in conjunction with switches and power points. Also see HPM combination wall plates in Chapter 10.

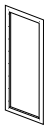
Chapter 3

Network Enclosure Installation

The HPM Nome Networks metal enclosures are available in four sizes, 14", 20", 28" and 42". Each size of enclosure is supplied with a hinged cover (includes lock assembly).

Fig 3.1

COMPONENTS		
Enclosures		
	HNEN1450	• 14" high • Base dimensions 362 x 356mm • Door dimensions 394 (W) x 387 (H) mm
	HNEN2050	• 20" high • Base dimensions 362 x 508mm • Door dimensions 394 (W) x 540 (H) mm
	HNEN2850	• 28" high • Base dimensions 362 x 711mm • Door dimensions 394 (W) x 743 (H) mm
	HNEN4250	• 42" high • Base dimensions 362 x 1067mm • Door dimensions 394 (W) x 1099 (H) mm
	• With locking and hinged door • Suitable for surface and flush mounting • Larger top openings make pulling wires easier • Additional knockouts, side lances and side tabs for easier mounting • Power outlet mounting provision	
Frames		
	HNFR1450	• Frame dimensions 419 x 412mm • To suit HNEN1450
	HNFR2050	• Frame dimensions 419 x 561mm • To suit HNEN2050
	HNFR2850	• Frame dimensions 419 x 768mm • To suit HNEN2850

COMPONENTS		
Frames		
	HNFR4250	• Frame dimensions 422 x 1122mm • To suit HNEN4250
	• One frame for each of the enclosure above • Cover up unsightly wall cutting • Installed between enclosure base and door	

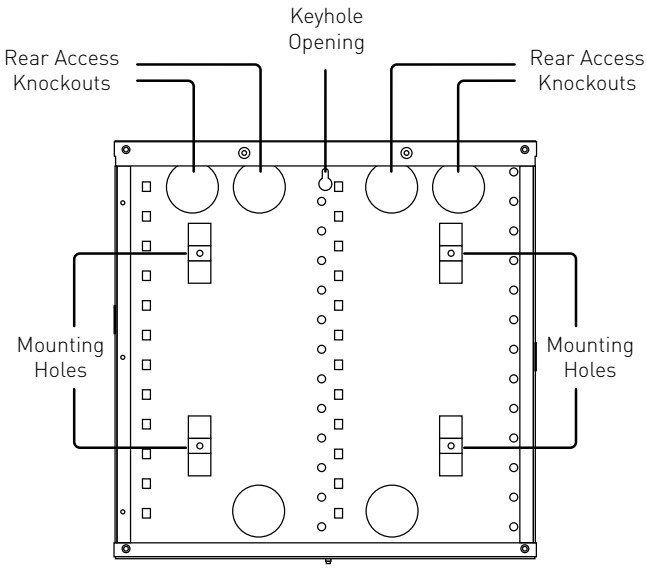
Enclosure Installation

Locate the enclosure centrally in the house to minimize the length of cable runs and in a climate controlled area. Temperature must be from 0°C to 50°C. Humidity is to be controlled to prevent condensation in the enclosures.

The enclosure must be located to ensure that the electrical outlet, if installed in the enclosure, is installed in compliance to all wiring requirements.

Note: The enclosure is not weather proof and should not be located outside or where temperature changes and humidity may allow condensation in the enclosure. The enclosure is not fire rated and should not be mounted in fire rated walls.

Fig 3.2



Surface Mounting

Typical surface mounting is on a ¾ inch plywood back board.

1) Securely mount plywood with rear access knockouts accessible, if needed.
2) If cable access is to be through the back of enclosure, remove wire access knockouts from rear of enclosure. (See Fig 3.2)
3) Position enclosure in desired location and mark top of centre keyhole opening located on the top centre of enclosure. (see Fig 3.2)
4) Install mounting wood screw at mark. Head must be ½" clearance from the back.
5) Hang enclosure on screw and mark four (4) mounting holes and wire access holes on plywood. (See Fig 3.2). Also mark top and bottom of enclosure.

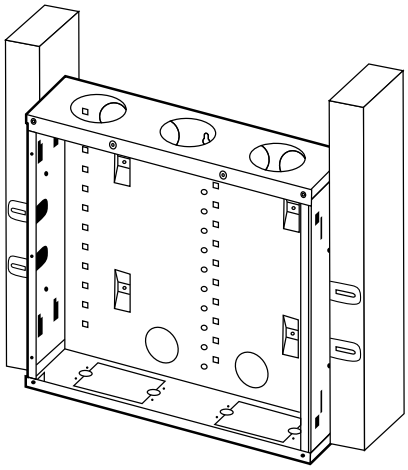
6) If cable access is from the rear, remove enclosure and cut access holes in plywood for cables.

7) Attach enclosure to wall using wood screws. Remove the top centering screw to avoid interference with modules.

Tip: Access hole may be a larger slot, provided it does not extend beyond the enclosure. Remove all rough edges to prevent cable damage.

Tip: It may be easier to rough-in cable and feed cables through plywood prior to attaching the enclosure.

Fig 3.3

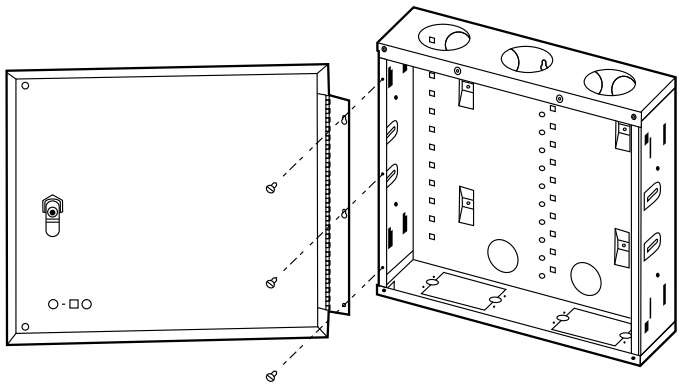


Flush Mounting

There are two methods for flush mounting the enclosure. In half inch drywall installations the enclosure may be mounted to the front of the studs. Bend out the side tabs on each side to 90 degrees (See Fig 3.3). Position the enclosure to the desired height and fasten using standard screws into the slots in the tabs.

Alternatively you may position the enclosure to the desired height and fasten to the sides of studs using the slots in the tabs. Do not fully tighten until enclosure is positioned for the desired depth. Drywall depth marks are embossed on the sides of the enclosure (see Fig 3.5). Enclosure should be snug prior to drywall installation, however it may be adjusted to assure it is flush with the wall after trim out.

Fig 3.4



Hinged Cover Installation

1) Partially install two (2) hinged cover mounting screws in the top two holes on the enclosure (see Fig 3.4).

2) Hang the hinged cover on the two partially installed screws using the keyhole openings on the hinge. The cover should fit up against the enclosure (surface mount) or the wall (flush mount). If the cover does not fit properly, check that the cables are not being pinched, or that the lock is not in the locked position.

3) Install the remaining hinge screws with lock washers.

4) Remove the top two screws and reinstall with lock washers. Tighten the screws.

5) Lock hinged cover if desired.

Enclosure Ground Cable

The enclosure must be earthed, regardless of whether a mains power outlet is installed inside. An earth conductor with minimum 2.5mm^2 cross-sectional area should be used for this purpose. Attach a lug to the end of the earth conductor and connect it to the earth terminal on the enclosure (see Fig 3.5). Connect the other end of the earth conductor to the building earth wiring.

Cable Rough-in

All the cabling to and from the enclosure is low voltage class 2 or communication cables. All codes and good wiring practices should be maintained, such as maintaining separation from power and using proper cable retention. The next section describes rough-in at the enclosure.

Telephone Cable Rough-in

1) Install Category cable from the enclosure to the phone company network interface device. Label cable near entry to the enclosure and at phone interface.

2) Identify the phone outlets around the house. Install Category cable from the enclosure to the phone outlets.

> **Tip:** It is recommended that a second cat 5e cable be run from the telephone network interface to the enclosure for future data application.

Data Cable Rough-in

1) For local area network (LAN) and other data connections, install Category cable from the enclosure to the desired outlets.

Coax Rough-in

1) Install Quad shield RG6 cable from the enclosure to the outlet locations. Route the cable through the appropriate upper access hole with approximately 1 metre of excess. Label cable near entry to the enclosure and at outlet locations.

Other Cable Rough-in

1) For audio and other low voltage applications, install appropriate cable per the application instructions.

> **Tip:** When laying cables at the hub end, be sure to leave enough cable to reach the intended modules inside the enclosure.
>
> **Tip:** Clearly labeling all connections in a structured wiring system is very important. This applies to the outlet end as well as the hub end of the cables. With multiple lines running to one location, it is necessary to be able to tell them apart, especially if you want to change the cabling configuration at a later date. There are two stages of identification.
>
> - Temporary labels that you apply during cable runs
> - Permanent wall plate labels
>
> It is critical to be consistent with terminology when creating labels. Information such as room ID, cable ID should be clearly defined. Extra information relating to the assigned application should be added to the labels when known.

Tip: See appropriate Standards for Category cabling codes and good wiring practice. Below are some pointers. They are by no means exhaustive.

Cable Support

- Cables must be supported. They must not stretch or sag because of their weight.
- Cables should not be run across suspended ceiling tiles or fluorescent light fittings
- Where possible, use approved cable trays, conduit or Cat5e supports.

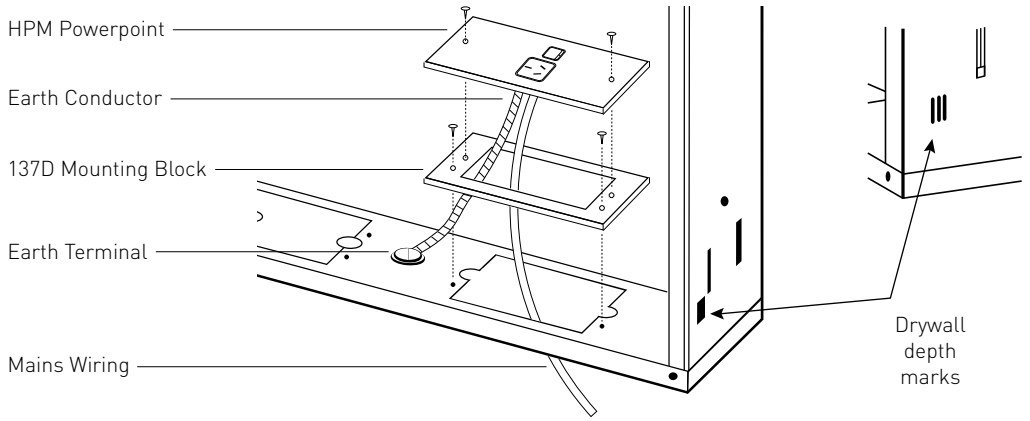
Cable Runs

- The maximum horizontal run should be 90m from enclosure to device.
- Run cables at least 150mm from fluorescent lights.
- Avoid EMI sources.
- Avoid areas of high temperature. This can increase cable attenuation.
- Never use staple guns. But tie the cable loosely.
- Never put any weight on the cable, ie. Do not walk on it or run it over.
- Never splice the cable or use bridge taps.
- Use maximum possible bend radius.

Cable Pulling

- Avoid sharp edges and corners, tight bends, kinks or turns.
- Avoid unnecessary bends.
- Make pulls as straight as possible. Do not drag the cable around corners.
- Do not exceed the manufacturer's recommended pulling tension.
- Minimize cable twisting.

Fig 3.5



Running Power To Enclosure

When installing any module that requires a 12V d.c. supply, it is recommended to run mains power to the enclosure so that the d.c. power supply can be conveniently located inside. Suitable d.c. power supplies are HPM's CAT HNPS005 (0.5A), CAT HNPS030 (3A) or CAT SWPS080 (8A). The preferred location for a mains outlet is on the bottom surface of the enclosure. Two rectangular knock-outs are provided for this purpose (see Fig 3.5). Remove the knock-outs and attach a CAT 137D mounting block as shown using two 6G self-tapping sheet metal screws.

Feed the mains power cable through the mounting block and connect to an HPM powerpoint. A vertical powerpoint (CAT XLV787) is recommended to accommodate a CAT HNPS005 plug pack so that it doesn't interfere with the enclosure door. Once wired, the powerpoint can be attached to the mounting block.

For installations where the bottom surface of the enclosure is not suitable, a mains outlet can be mounted on the back surface where the round knock-outs are located (see Fig 3.4). Remove the knock-outs and drill 2.5mm pilot holes in the enclosure so that the CAT 137D mounting block can be attached. Feed the mains power cable through the mounting block and connect to an HPM powerpoint. Once wired, the powerpoint can be attached to the mounting block.

Chapter 4

Telephone Distribution System

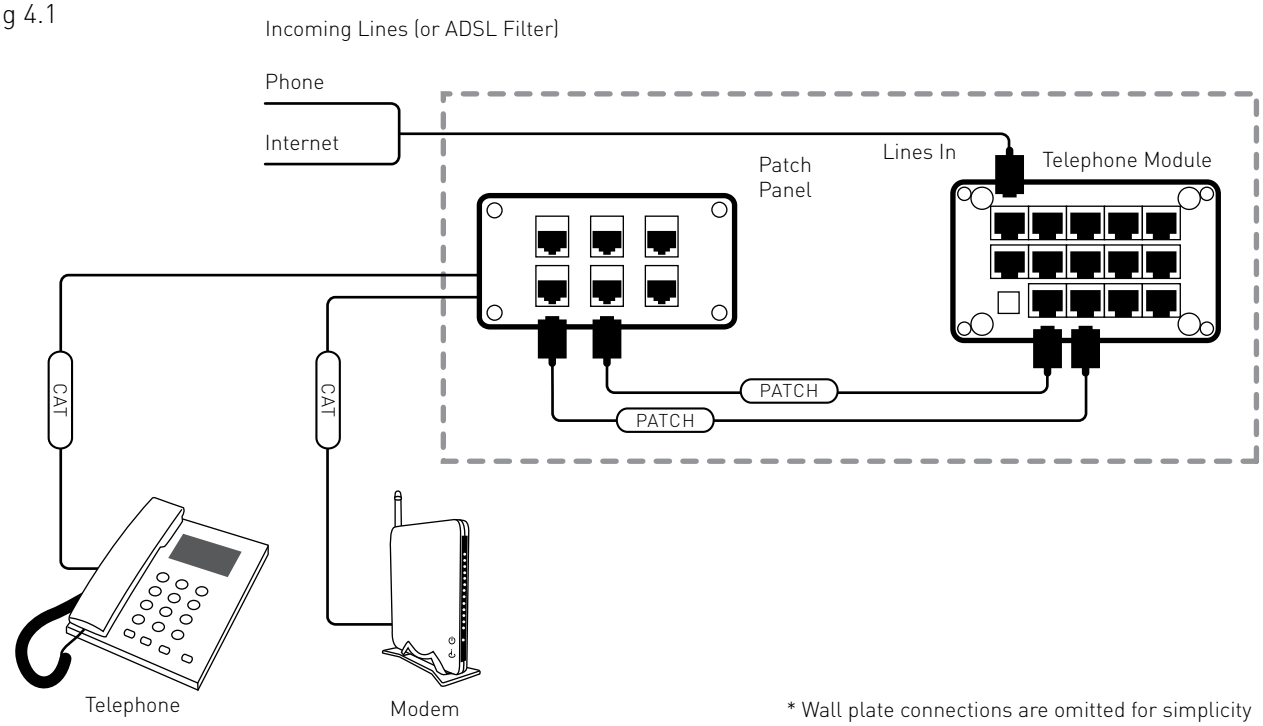
The HPM Home Networks telephone system accepts up to 4 incoming phone lines and distributes them to up to twelve locations utilizing the CAT5e (or CAT6) structured wiring links.

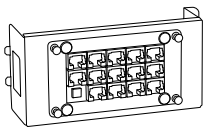
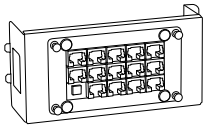
There is a choice of two Telephone Modules (CAT HNTM1478, HNTM1475). They feature RJ45 jacks for easy termination, patching and re-patching.

HNTM1478 is best suited to distributing a single line, whereas HNTM1475 is best suited to distributing up to 4 lines (see Configuring Multiple Phone Lines).

They also feature a line seizure port for security systems.

Fig 4.1



COMPONENTS		
Telephone Modules		
	HNTM1478	• Line 1 is available at 12 locations • See configuration table below
	HNTM1475	• Line 1 is available at 8 locations • See configuration table below
	• All connectors 8 pin 8 conductor (RJ45) • All ports meet TIA 568A Category 3 • 50 microns gold plated contact points • Accept 4 incoming telephone lines • RJ-31x line seizure for security system	

Configuring Multiple Phone Lines

The phone lines to be distributed (up to 4) should be arranged at 'Lines In' according to the following table.

Pin No	T568A Colour Code	Function
1	Green/White	Line 3
2	Green	Line 3
3	Orange/White	Line 2
4	Blue	Line 1
5	Blue/White	Line 1
6	Orange	Line 2
7	Brown/White	Line 4
8	Brown	Line 4

Tip: For easy termination of incoming lines, punch down the category cable coming from phone company network interface at a patch panel port. Patch the port to "Lines In" of the telephone module.

The 'Line Out' ports on the HNTM1475 and HNTM1478 have different configurations, which means that the pin connections of the lines are different. This is because a conventional telephone only connects to pins 4 and 5. The different configurations available on each model are shown in the following table:

MODEL	NUMBER OF PORTS	CONFIGURATION	PINS 4,5 CONNECT TO
HNTM1478	12	1,2,3,4	Line 1
HNTM1475	8	1,2,3,4	Line 1
	2	2,1,3,4	Line 2
	1	3,4,1,2	Line 3
	1	4,1,2,3	Line 4
Example: If Line 2 is required at a particular location, then this location should be patched to a "2,1,3,4" output port.			

Note that although telephones only use pins 4 and 5, the other lines are still available on the other pins at each outlet. They can be accessed by wiring your patch leads to swap the order of lines as required. This is useful if, for example, you need Line 2 at more than two locations. More details regarding the pin connections of each configuration are shown in the following table:

PIN NO.	T568A COLOUR CODE	CONFIGURATION			
		1,2,3,4	2,1,3,4	3,4,1,2	4,1,2,3
1	Green / White	Line 3	Line 3	Line 1	Line 2
2	Green	Line 3	Line 3	Line 1	Line 2
3	Orange / White	Line 2	Line 1	Line 4	Line 1
4	**Blue**	Line 1	Line 2	Line 3	Line 4
5	**Blue / White**	Line 1	Line 2	Line 3	Line 4
6	Orange	Line 2	Line 1	Line 4	Line 1
7	Brown / White	Line 4	Line 4	Line 2	Line 3
8	Brown	Line 4	Line 4	Line 2	Line 3

Note: Please be aware that there is a limit to the number of telephones each incoming line can drive. This limit is expressed as Ring Equivalence Number (REN). For example a standard handset has REN of 1. A cordless telephone, with power adaptor, usually has REN of about 0.3. Add the REN numbers to get the total REN for that incoming line. As a rule of thumb, do not exceed a REN of 3.

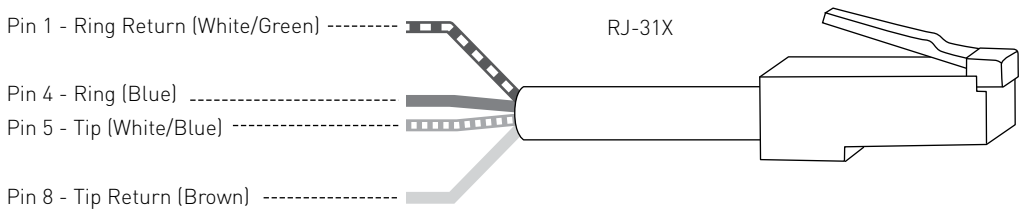
Mode 3

NOTE: The following steps MUST be followed to use the Line Seizure option as shown in Figure 4.2

1. Terminate a patch cable with a RJ45 on one end and bare-wire connection on the other. Connect the bare-wire end of the patch cable to the security system according to manufacturer's instructions. Insert the RJ45 connector end of the cable into the RJ45 jack on the module that is labeled "LINE SEIZURE".

2. Activate the Line Seizure function on the module by locating the two white dip switches on the module, peeling off the protective blue tape, and moving both switches upward to the active position.

Fig 4.2



ADSL Internet Services

An ADSL filter can be inserted up-stream of the telephone module. In this case, the phone and ADSL lines are patched to phone and modem on separate CAT5e (or CAT6) runs.

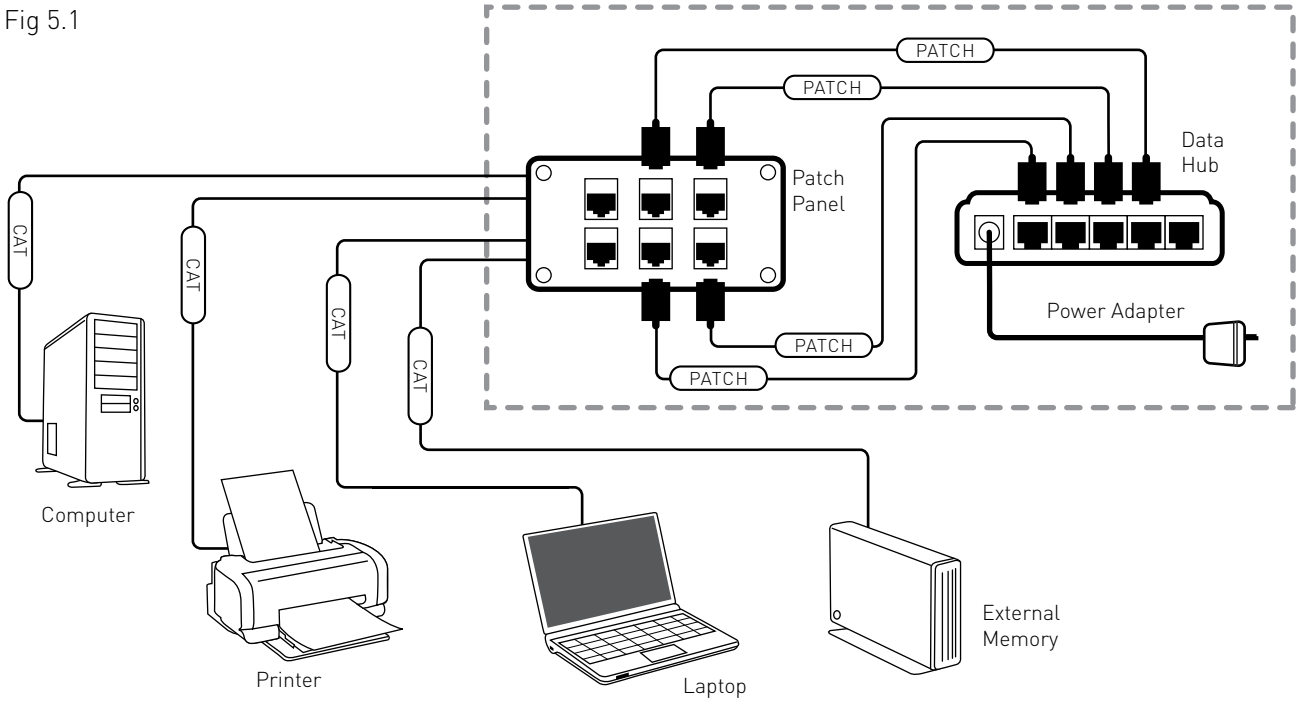
Chapter 5

Data Network

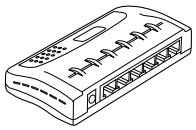
A data network can be built with an HPM Home Networks Patch Panel (CAT HNAC1000, HNAC1014 or HNAC1015) and Data Hub (CAT HNDH05) to connect all the computers and peripherals, such as printers.

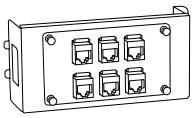
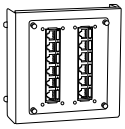
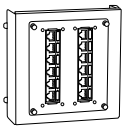
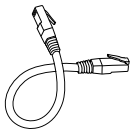
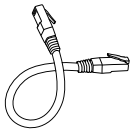
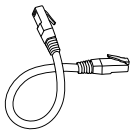
If more ports are required the system can be expanded by adding an extra data hub or hubs. Use a patch lead to link any port on the first hub to any port on the second hub.

Fig 5.1



* Wall plate connections are omitted for simplicity

COMPONENTS		
Data Hub		
	HNDH05	• 5x 10/100Mbps RJ45 ports • DC power supply included • Store and forward switching • Full and half-duplex mode • Auto-negotiation on each port • Auto-polarity detection

COMPONENTS		
Patch Panels		
	HNAC1000	• 6 ports • CAT5e, T568A
	HNAC1014	• 12 ports • CAT5e, T568A
	HNAC1015	• 12 ports • CAT6, T568A
Patch Leads		
	HNPL5E200	• 200mm long • CAT5e
	HNPL5E300	• 300mm long • CAT5e
	HNPL6300	• 300mm long • CAT6

Chapter 6

TV / Video system

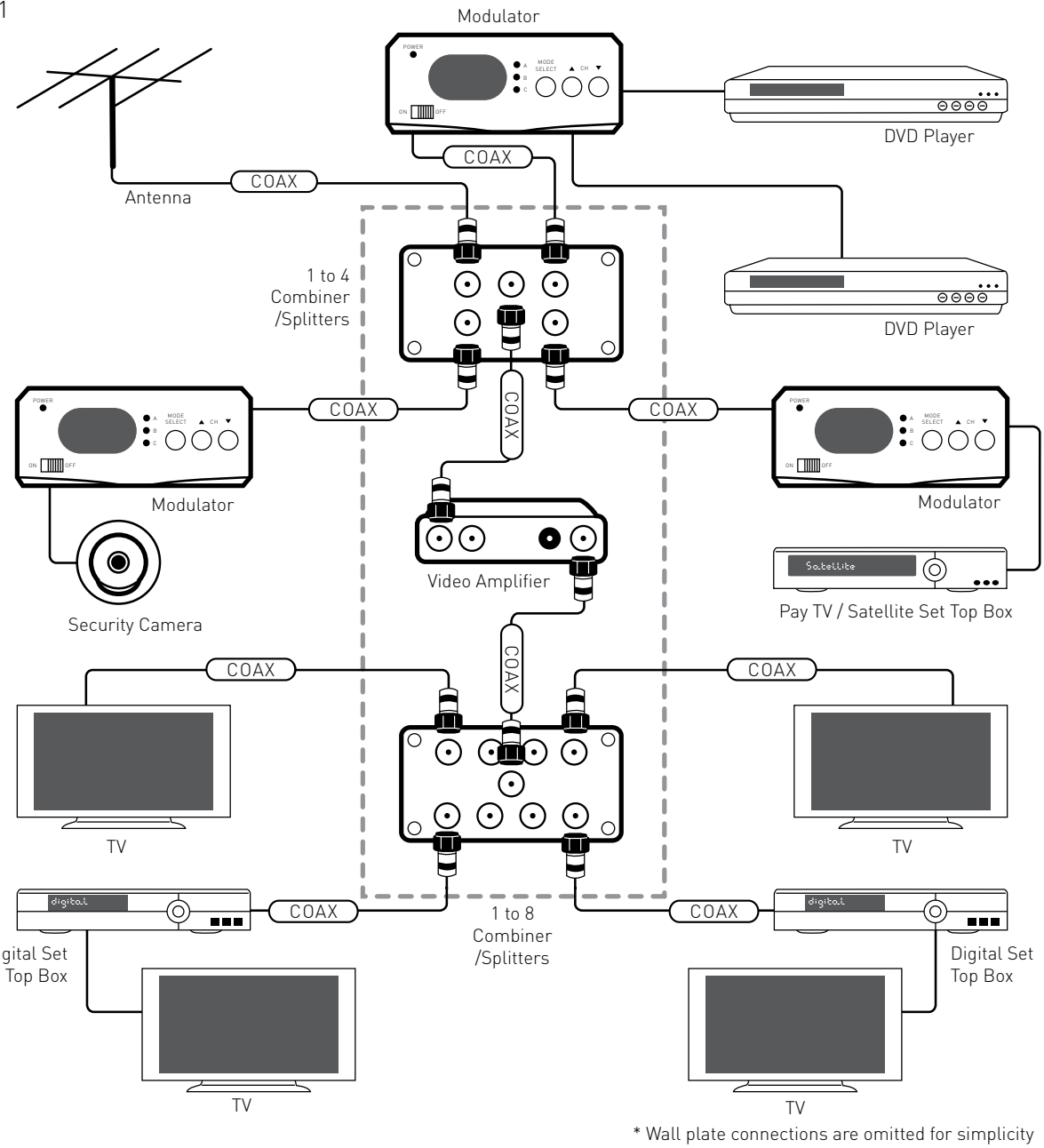
Free-to-air TV, DVD, Pay TV and security camera signals can be distributed to up to 8 televisions using the HPM Home Networks' combiner and splitter arrangements.

All baseband video sources from equipment such as DVD, Pay TV and security camera are modulated using a modulator (CAT HNMD01 or HNMD03). These modulated signals are fed to the combiner (CAT HNVM1000 or HNVM1002) together with free-to-air antenna signal. This combined signal is then fed into a splitter (CAT HNVM1000 or HNVM1002) to be distributed to TVs around the home. A Video Amplifier (CAT HNVA01) might be required between the combiner and splitter.

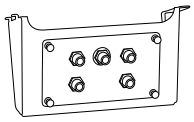
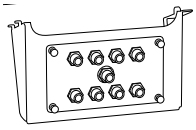
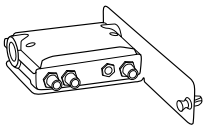
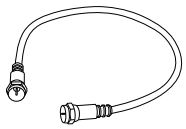
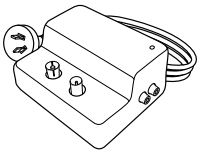
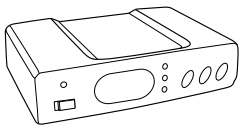
A TV when hooked up to one of the outlets receives all the free-to-air channels from the aerial antenna plus the modulated video sources, showing up on pre-set analog channels.

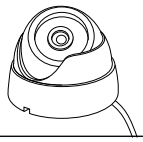
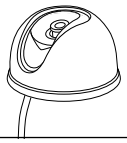
The video distribution system is also digital ready. Digital TVs or digital set-top-boxes at the outlets are able to receive digital TV broadcast.

Fig 6.1



* Wall plate connections are omitted for simplicity

COMPONENTS		
Combiners / Splitters		
	HNVM1000	• One to four combiner/splitter
	HNVM1002	• One to eight combiner/splitter
	• F type connectors • 1GHz rated • Digital TV ready	
Video Amplifier		
	HNVA01	• Coaxial input, coaxial output • Gain adjustments for UHF and VHF • 12V d.c. power required • Digital TV ready • F type connectors
Coax Patch Lead		
	HN364597-01	• 12 inch long • Flexible • high performance 75 Ohm coax cable • F type connectors
Modulators		
	HNMD01	• 1x composite video and audio input • 1x F type UHF output • User frequency select via Dip switch • Built-in combiner (eg. TV antenna) • Gain adjustment • Power plug and lead
	HNMD03	• 3x composite video and audio inputs • 1x F type UHF output • LED channel display • Power and MODE SELECT LED indicators • Easy set-up with MODE SELECT and up/down push buttons • Gain adjustment • Power adapter included • Comes with 3 sets of audio and video cables

COMPONENTS		
Cameras		
	HNSC01	• Colour camera
	HNSCIR01	• Colour camera • 24 IR LEDs for night operation • IR light distance 25m

TV Signal Strength Calculations

There are signal losses associated with any TV/video distribution system. Measuring in dB (decibells), some of the losses introduced by components are:

- Coax cable: 0.12dB per metre (typical value only)
- 1x4 combiner/splitter: 7.2dB (200-550MHz, see HNVM1000 manual for details)
- 1x8 combiner/splitter: 11.0dB (200-550MHz, see HNVM1002 manual for details)

The acceptable signal strength for modern TV's is between 65dB and 73dB. Quick estimates of a system's signal loss can be calculated by adding up all the element losses of that system, such as the length of coaxial signal path from antenna or set-top-box to TV, combiner and splitter losses.

The Video amplifier (CAT HNVA01) may be required to boost the signal to an acceptable level at the TV end. It is recommended that the amplifier is placed between the video combiner and splitter linked by two flexible coax cables (CAT HN364597-01).

Chapter 7

Audio System

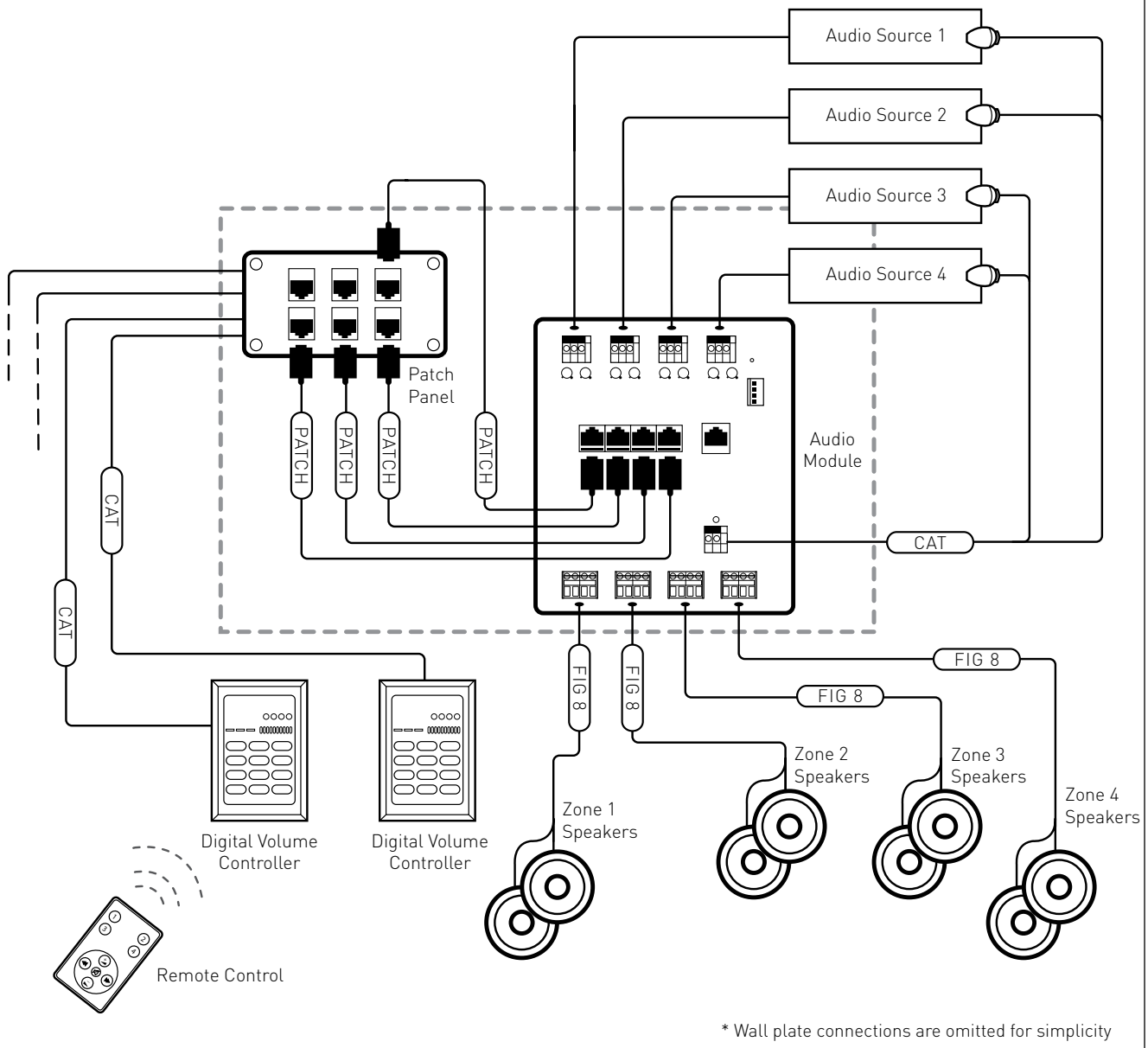
With HPM's Audio Distribution System, audio from 4 different sources can be delivered to up to 4 different zones of a home, public building or commercial space, simultaneously.

The Audio module (CAT HNAM02) is the hub of the system. This module takes signals from up to 4 sources and supplies amplified, high quality sound directly to stereo speakers in each output location.

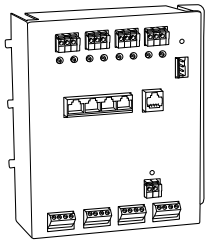
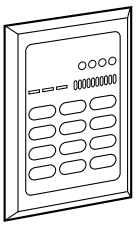
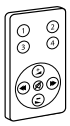
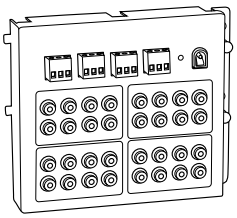
When connected to the Audio module (CAT HNAM02), the wall unit, Digital volume controller (CAT HNVC03), enables source select and volume control functions to be performed in each output location. Treble and bass level adjustments can also be performed via the Controller. A whole-house broadcast function is conveniently built into the Controller and can be activated by pushing the 'Broadcast' button and speaking into the wall unit.

Expansion up to 16 zones is possible with the use of an Audio splitter module (CAT HNAS01) and up to 3 other Audio modules (CAT HNAM02).

Fig 7.1



* Wall plate connections are omitted for simplicity

COMPONENTS		
Audio Module		
	HNAM02	• 4 stereo input channels with left and right level adjustment • 4 stereo output channels, max 10W + 10W • Transmits source equipment IR signals (IR emitter required – not included) • Drives broadcast intercom function • Power LED indicator
Digital volume controller		
	HNVC03	• Performs volume control and source select functions • 10 segment LED level indicator • Performs treble and bass adjustments • Broadcast and mute capabilities • Built-in IR receiver • Supplied with remote control HNRC0I
Remote control		
	HNRC01	• Source select buttons • Volume up/down buttons • Mute button
Audio splitter module		
	HNAS01	• 4 stereo input channels • 4 sets of four stereo outputs • Removable screw terminal blocks for easy installation • 16x stereo audio cable with RCA plugs included

Tips: Use shielded audio cable to deliver source signal if source equipment is located far away from Audio module.

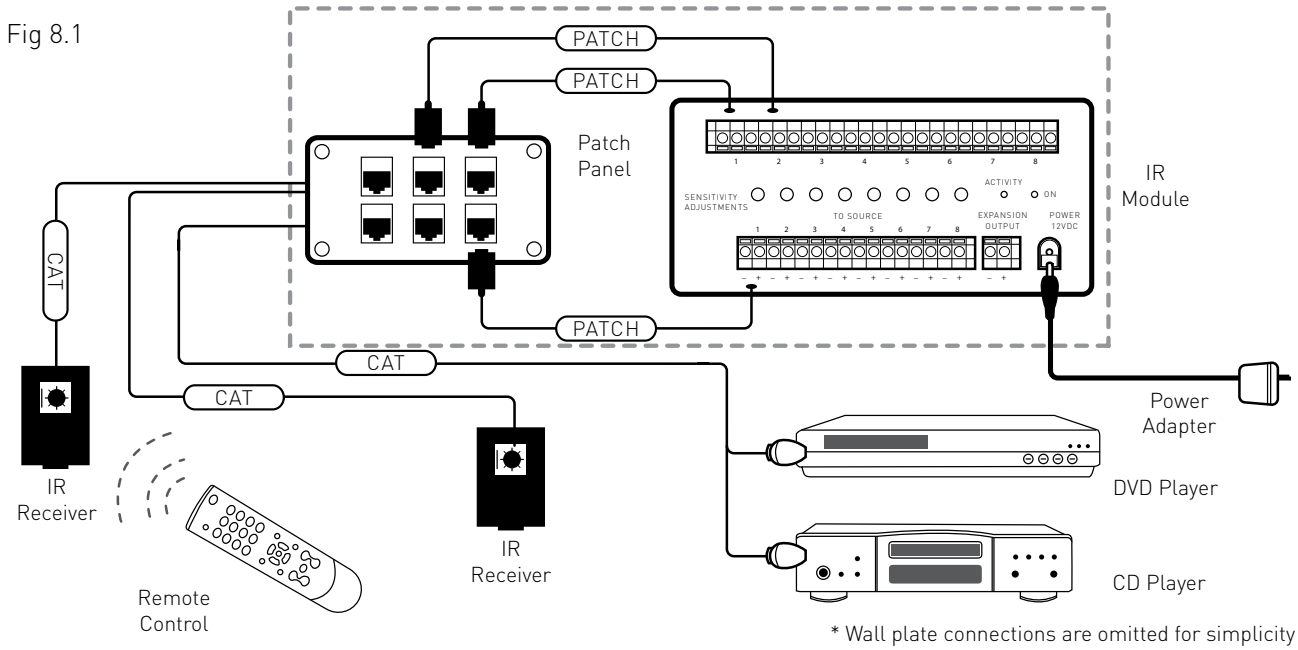
Chapter 8

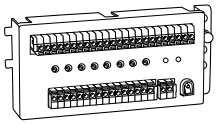
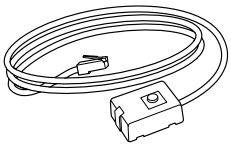
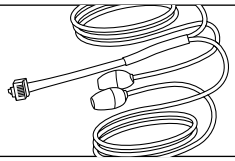
IR System

The IR (Infra-red) distribution module (CAT HNIRM88) routes IR signals to allow remote control of devices; such as CD/DVD players, PayTV and Digital TV set-top-box; from any room in the house.

The module receives IR signals utilizing IR receivers (CAT HNIRR02), from up to 8 rooms, and transmits all the received signals to up to 8 IR emitter pairs (CAT HNIRE22), via the Cat5e network and RJ45 wall sockets. The emitters in turn emit the signals to the intended AV equipment.

Fig 8.1



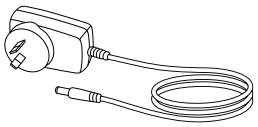
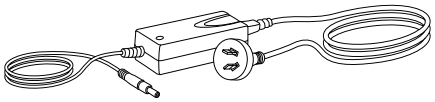
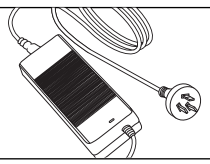
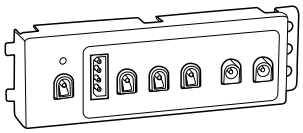
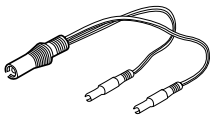
COMPONENTS		
IR Module		
	HNIRM88	• Handles IR signals of most common AV equipment • 8 receiver terminals and 8 emitter terminals • Sensitivity adjustment
IR Receiver		
	HNIRR02	• Carrier frequency adjustable from 32kHz to 56kHz • Compatible with most common electronic devices including PayTV set-top-boxes • Comes in compact enclosure with IR window • Comes with RJ45 jack
IR Emitter		
	HNIRE22	• 2 IR emitters • Comes with RJ45 jack • Small head area to target source equipment IR window

Chapter 9

Power Requirements

A number of modules in the hub require a 12V d.c. power supply. HPM Home Networks range has three power adaptor packs and a couple of means of supplying more than one module from a power supply.

Fig 9.1

COMPONENTS		
Power Supply		
	HNPS005	• 12V d.c. regulated • 500mA rated • Ideal for video amplifier
	HNPS030	• 12V d.c. regulated • 3A rated
	SWPS080	• 12V d.c. regulated • 8A rated • Ideal for audio module
DC Power Splitter Module		
	HNPSM01	• 100W rated output • 1 x 4 pin 5.08mm pitch output connector (for audio module) • 3 x 2.5mm OD jack outputs • 2 x 2.0mm OD jack outputs • Overload protection • Comes with power cables
Power Splitter Lead		
	HNPL02	• 5A rated • 1x 2.5mm jack to 2x 2.5mm sockets

The table below shows power requirements of the modules. It can be used to calculate the power supply required. Either the DC power splitter module (HNPSM01) or Power splitter lead (HNPL02) can be used to optimize the number of power pack required.

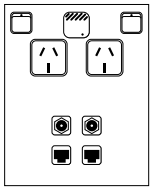
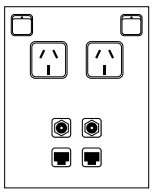
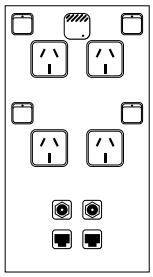
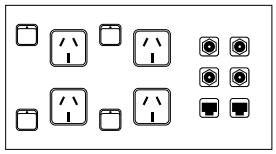
MODULE	VOLTAGE REQUIREMENT	CURRENT RATING
Video Amplifier	12V d.c.	100mA
Audio Module	12V d.c.	7A
Audio Splitter	12V d.c.	500mA
IR Distributor	12V d.c.	800mA

Chapter 10

Wall Plate Outlets

HPM combination wall plates are available to complete your structured wiring system. These unique plates combine power outlets with data and video for optimization.

Fig 10.1

COMPONENTS		
Wall Plate Outlet		
	XL222PA/2T	• 2 power, 2 RJ45, 2 RF outlet • Surge protected • 2 horizontal plates tall
	XL222/2T	• 2 power, 2 RJ45, 2 RF outlets • 2 horizontal plates tall
	XL422PA/3T	• 4 power, 2 RJ45, 2 RF outlets • Surge protected • 3 horizontal plates tall
	XLV424/3W	• 4 power, 2 RJ45, 4 RF outlets • 3 vertical plates wide

Chapter 11

HPM Home Networks Kits

HPM Home Networks can be made up from components explained in previous chapters. They are also supplied in two convenient kits. Depending on the size of the project, pick one of the kits to help start your project.

They have components for telephone and TV/video distribution plus room for other upgrades at a later date. See table below for kit contents.

STANDARD KIT			
	COMPONENTS	**CAT**	**QTY**
CAT HNMKSTD14	Enclosure Hinged Door 14 Inch	HNEN1450	1
	Telephone Module 4x12	HNTM1478	1
	Video Combiner/Splitter 1x4	HNVM1000	1
	Patch Panel CAT5e 6 Port	HNAC1000	1
	CAT5e Patch Lead 200mm	HNPL5E200	6
ADVANCED KIT			
	COMPONENTS	**CAT**	**QTY**
CAT HNMKADV28	Enclosure Hinged Door 28 Inch	HNEN2850	1
	Telephone Module 4x12	HNTM1478	1
	Video Combiner/splitter 1x4	HNVM1000	1
	Video Combiner/splitter 1x8	HNVM1002	1
	Co-ax Patch Leads 12 Inch	HN364597-01	2
	Video Amplifier	HNVA01	1
	Patch Panel CAT6 12 Port	HNAC1015	1
	CAT 6 Patch Lead 300mm	HNPL6300	12
	Power Supply 500mA	HNPS005	1

Warranty

HPM Legrand products are warranted as here and after appears, against faulty material and/or workmanship for a period of one year from the day of purchase.The obligation of the manufacturer under this warranty is limited to servicing and replacing defective parts when the unit is returned to the authorised place of purchase. To obtain warranty repair, the purchase receipt should be returned with the product.This warranty becomes void on any unit which has been tampered with or damaged by accident, short circuited, loaded beyond rating or damaged otherwise by improper operation. The warranty is also conditional on the unit being installed by a licensed electrical contractor. All other warranties, whether expressed or implied, and whether arising by operation of law or otherwise are hereby excluded.

Customer Service

For all customer service and technical support please call Monday to Friday during business hours.

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