Digital Plumbers

Builders Bible

Design

To be used in conjunction with Digital Plumbers plot licence
or as a design guide ONLY

Edition 1- Rev 2.0

Contents

DESIGN AND PLANNING

How to use this book

Thank you for choosing a Digital Plumbers wiring system. This system has been designed to give you the most flexibility with the least complicated installation.

The Digital Plumbers System uses industry standard cabling types to carry audio, video and data signals around the home. Nearly all of the cables connect to the Distribution Point (**DP**), where one can easily control how the signals are distributed. This guide is designed to give an understanding of the Digital Plumbers Wiring System so you have the confidence to design the system to suit your own requirements.

Throughout this book you will find information symbols prompting you:

When you see this sign it means **'for information only'**

When you see this sign it means **'take note and be careful'**

When you see this sign it means **'make a decision'**

When you see this sign it means **'extra cost option'**

1.0 **Introduction** - What can it do?

A Digital Plumbers Wiring Pack provides a wiring infrastructure to support communications and entertainment throughout the home. Once installed the homeowner can enjoy the benefits of:

Whole House Audio: music may be listened to in all Connected Rooms in the home using discreet optional in-ceiling speakers.

Digital and Analogue TV and Radio: Sky / Freeview / FM / Digital radio signals are available in all Connected Rooms using in-wall sockets.

Home Cinema: wiring provided in the Main Living Space allowing rear speakers to be used for surround sound.

Home Data Network: available through in-wall sockets in all Connected Rooms, and can be extended with a wireless network.

Home Telephone Network: available through in-wall sockets in all Connected Rooms, and can be extended with cordless handsets.

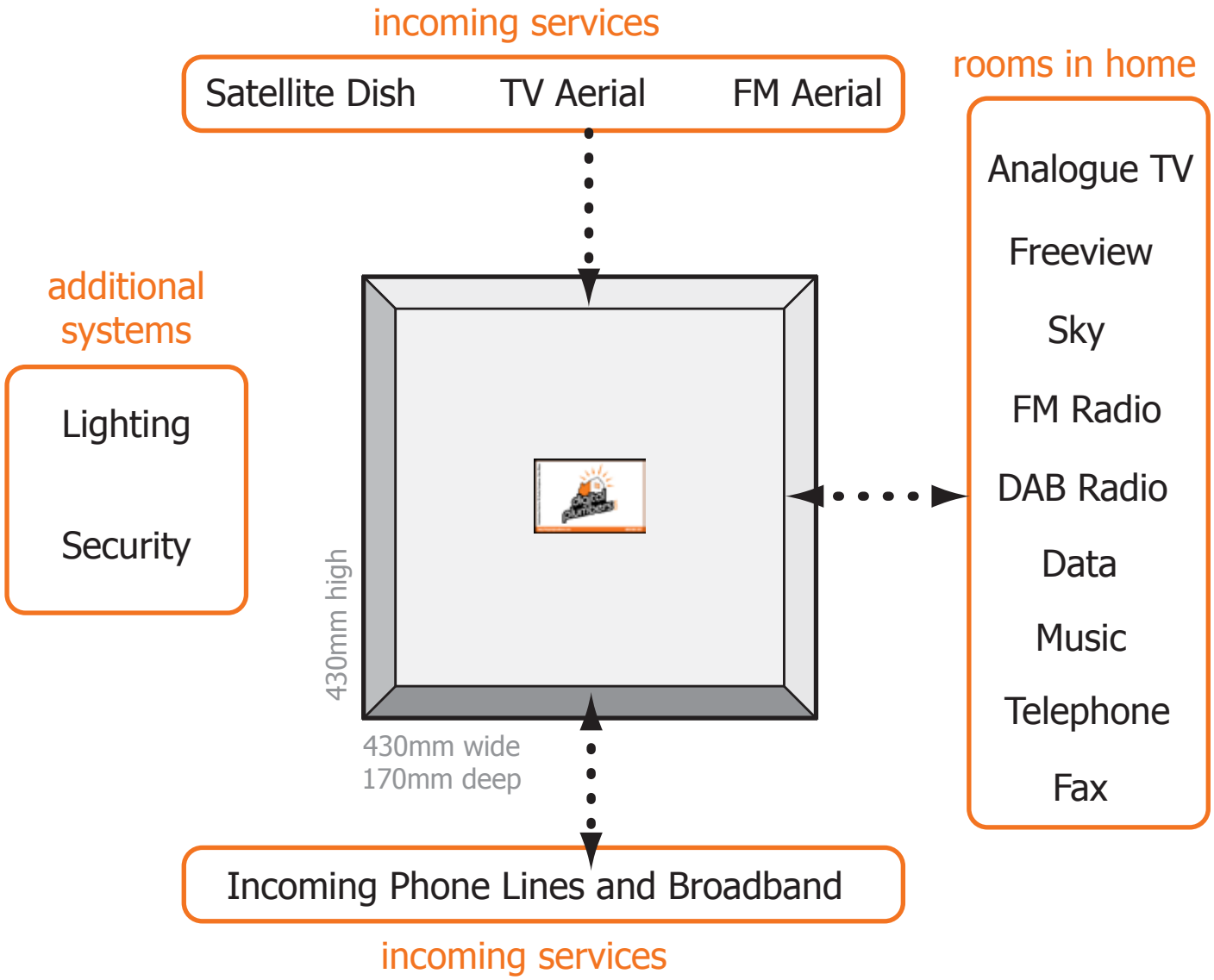
Home Monitoring System: can be set up using a variety of optional wireless devices.

Home Lighting Control: can be added in any room, using optional in-wall dimmers, to create different moods or scenes at the touch of a button.

A successful installation depends on the wiring being installed correctly throughout the home. All information required to accomplish this is found within this Digital Plumbers Builders Bible.

1.1 **Introduction** - A System Overview

The Digital Plumbers Wiring Pack is a structured cabling system which uses a centralised Distribution Point to 'direct' information around the home. Incoming services from the Satellite dish, TV aerial, FM / DAB aerial, Telecoms provider and ISP are connected to the Distribution Point. These can then be distributed to different rooms within the home. Most cables are star-wired back to this centralised Distribution Point.



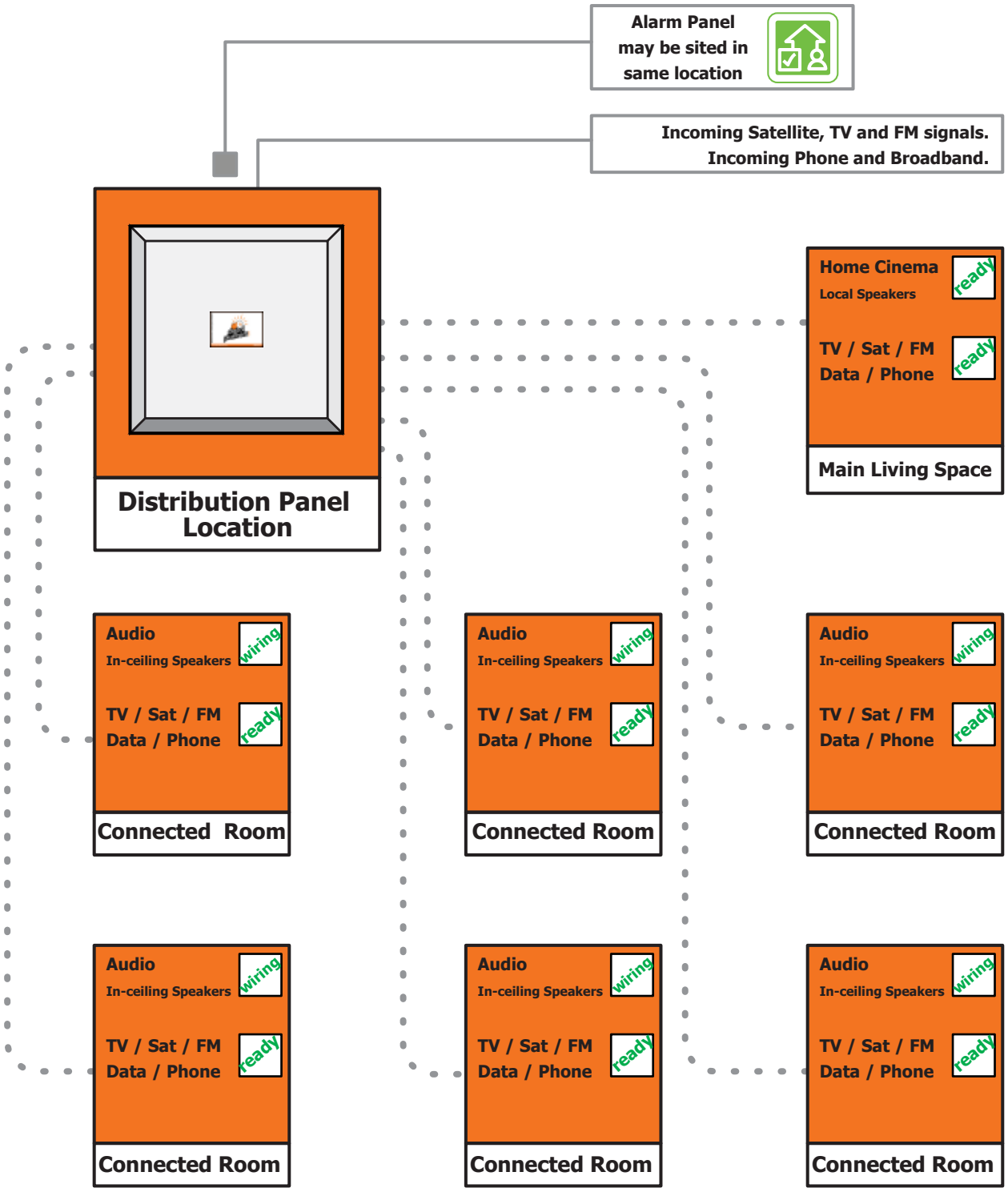
System Planning - Simple Elements

The Digital Plumbers Wiring System has been designed to give you the most flexibility with the least complicated installation. A home with a Digital Plumbers wiring system will contain a few simple elements.

A **Distribution Point** location - this is the heart of the home's wiring, typically hidden away. Incoming cables from the satellite dish, FM and TV aerials, and phone services must run to this location.

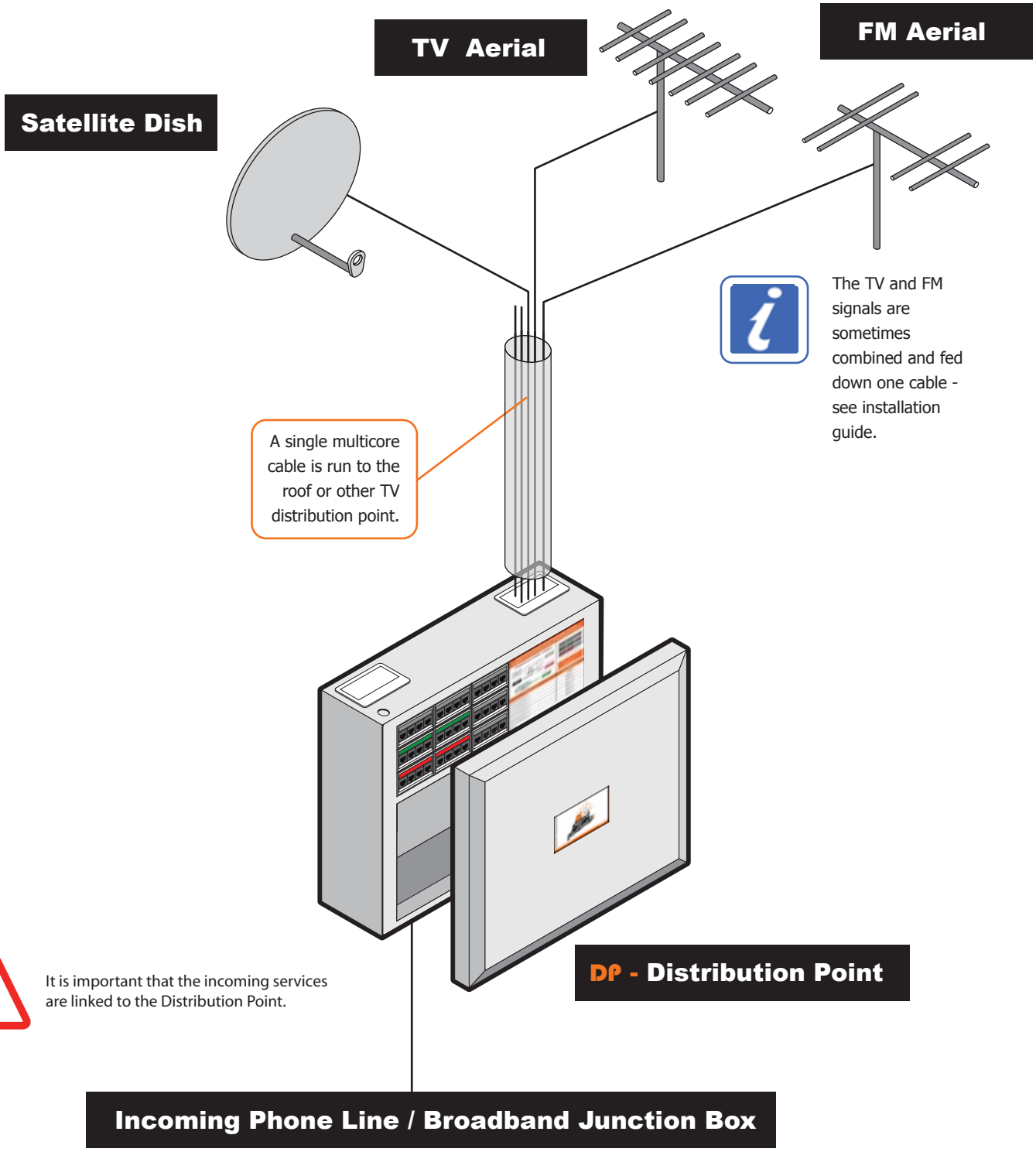
A **Main Living Space** - this is typically the Living Room or Reception Room of the home. This will have pre-wiring for a Home Cinema and will be the location for the main audio system and main Sky or Freeview box location to be played back to each room throughout the home. Like all Connected Rooms this room will receive TV, Satellite, Data and Telephone signals.

Six **Connected Rooms** - these will be rooms where audio is available through optional in-ceiling speakers. The Connected Rooms are typically bedrooms, studies, kitchens and dining rooms. These rooms will also receive TV, Satellite, Data and Telephone signals.



1.3 System Planning - Incoming Services

The Distribution Point routes all the multimedia signals around the home. To do this it will first need to receive incoming signals from the outside world. Cables are required to connect the Distribution Point to the Satellite Dish, TV / FM Aerial and Incoming Telephone Line.



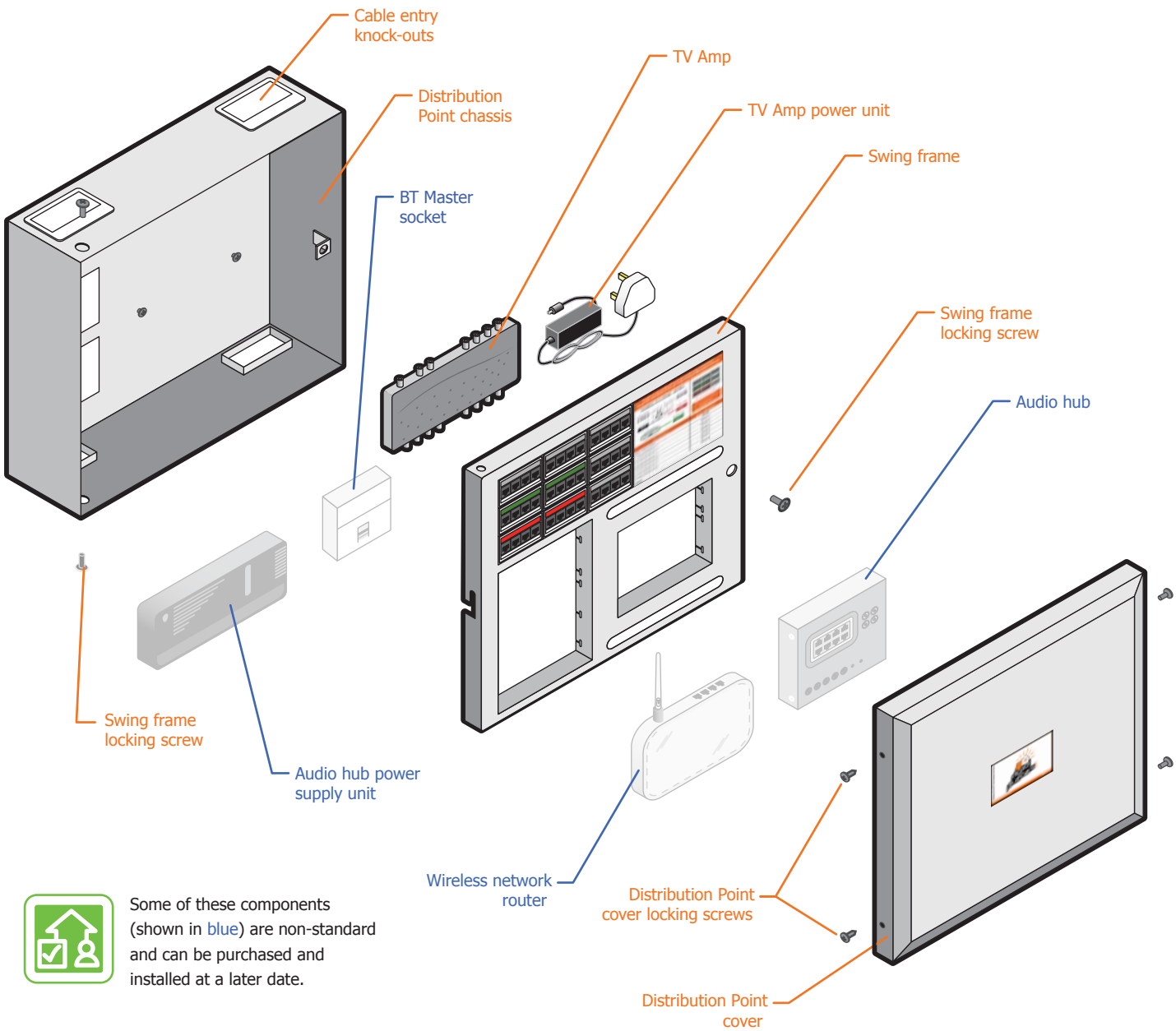
What you must do	What we do	Optional
The electrical contractor should run the cable to the dish and aerial locations on the roof, or other TV distribution location. The electrical contractor should liaise with the telecoms provider or others and run the supplied incoming telephone cable to their junction box position.	Supply the cable and distribution panel to site.	We can arrange for a contractor to install satellite dish and aerials. We can order phone lines and / or broadband service if required.

Distribution Point - An Overview

The Distribution Point (**DP**) is the heart of the Digital Plumbers Wiring System. Almost all cables are to be star-wired back to the **DP**. The **DP** uses standard patching to route audio, TV, Sat, FM, telecoms and data signals to the rooms within the home. It is designed to be earthed, installed and terminated by the electrician.

The **DP** will arrive on site pre-assembled with each standard component in place. An overview looks like this:

Standard components labelled in orange.
Additional non-standard components labelled in blue.

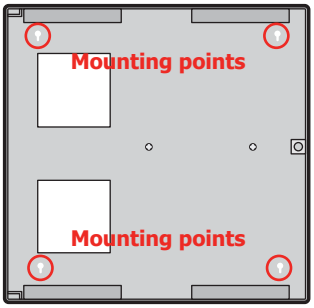


Some of these components (shown in blue) are non-standard and can be purchased and installed at a later date.

What you must do	What we do	Optional
Refer to the packing list supplied and check the standard components are in the box.	Supply the equipment to site.	Wired / wireless broadband router. Multi-room audio equipment.

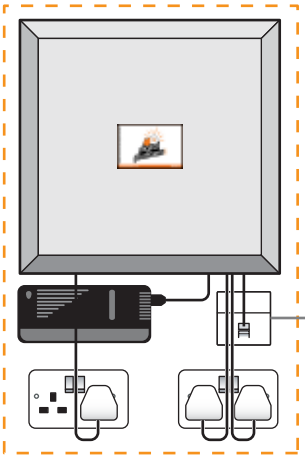
1.5 **Distribution Point** - Installation Guidelines

The **DP** is where the incoming services and most cables will run back to. A location for this needs to be determined for the electrical contractor at an early stage. The **DP** can be hidden away under the stairs or in a utility room, for example. It needs to be placed somewhere accessible and at an appropriate height from the floor so an electrician or engineer can safely work on it. The panel needs 2 x 13 Amp double switched socket outlets located close to it. It is recommended that cable management be provided to run the cables to the **DP**. Trunking can be used to feed cables directly into the cable knock-outs, or run alongside as indicated. The electrical contractor will decide the best way of managing the cables.



430mmW x 430mmH x 170mmD

Installation of the **DP** is easy. Ensure the mounting surface can support the weight of the panel (approx. 15kg when loaded), is structurally sound, and level. The **DP** is mounted using 4 supplied screws (use the appropriate rawlplugs) to clamp the chassis to the wall. A good height for the chassis is approx. 1300mm from floor to chassis base.

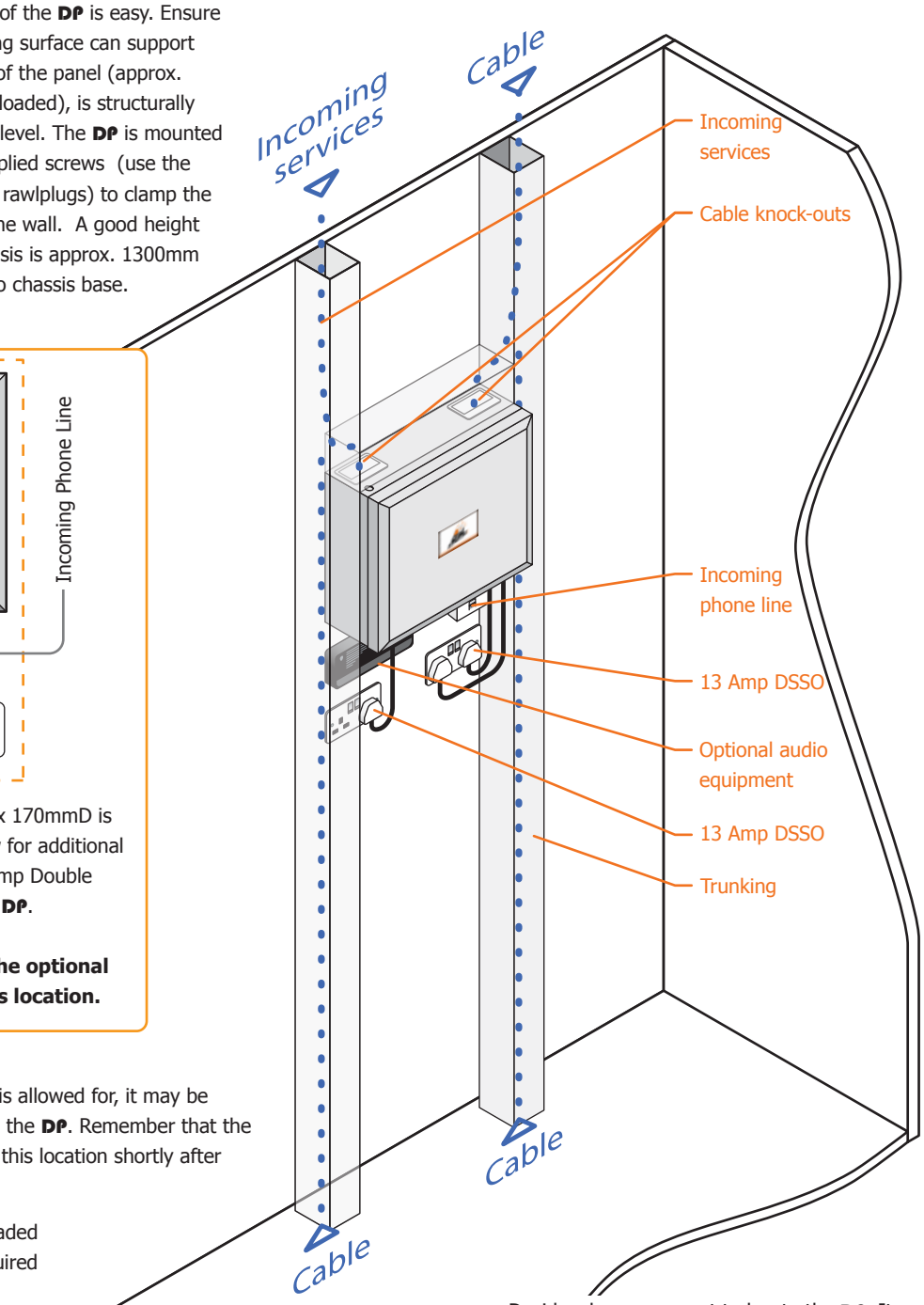


A wall space of 450mmW x 650mmH x 170mmD is big enough to install the **DP** and allow for additional equipment. Ensure there are 2 x 13 Amp Double Switched Sockets near or close to the **DP**.

Allow an extra 200mm height if the optional security system is planned for this location.

If the security system option is allowed for, it may be intended to site it adjacent to the **DP**. Remember that the user will need easy access to this location shortly after arriving home.

This example shows a fully loaded **DP** to illustrate the space required for installation. It also shows trunking for cable management. Note the incoming phone line and services.



Decide where you want to locate the **DP**. It must be accessible for electricians and engineers. Many cables will run to the **DP** so suitable cable management may be required.

What you must do	What we do	Optional
Install the **DP** on the wall. Ensure all relevant cables are running to this location. Ensure power - 2 x 13 Amp Double Switched Sockets are located close to the panel.	Supply the equipment to site. Supply a 1:1 scale drawing for use to allocate the necessary wall space.	-----

Cabling and Sockets - An Overview

The Digital Plumbers Wiring System requires a simple cabling infrastructure to be run correctly throughout the home. A few key locations need to be identified so that the cable can be run to the correct locations:

The **Distribution Point** location - this is where the **DP** will be.

The **Main Living Space** - this is where the home's distributed Satellite or Freeview receiver and distributed music system should be located, typically the main TV and Hi-Fi location in the living room.

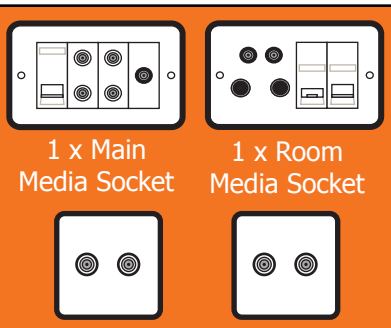
Up to 6 **Connected Rooms** - these will be the rooms enabled for Multi-room Audio (achieved by installing additional, discreet in-ceiling speakers, at a later date). TV / FM / Sky / data and telecoms signals are available in these rooms.

Fill in names of the rooms below. The equipment and sockets (as supplied) for each room are shown below. A Connected Room with Multi-room Audio pre-wiring means the cabling will be in place to allow the equipment to be installed at the homeowner's request.

1 x Distribution Point

DP - Distribution Point

Location



1 x Main Media Socket

1 x Room Media Socket

2 x Rear Speaker Sockets

Main Living Space

Room Name

Multi-room Audio pre-wiring

1 x Room Media Socket

1 x Local Audio Socket

Connected Room 1

Room Name

Multi-room Audio pre-wiring

1 x Room Media Socket

1 x Local Audio Socket

Connected Room 2

Room Name

Multi-room Audio pre-wiring

1 x Room Media Socket

1 x Local Audio Socket

Connected Room 3

Room Name

Multi-room Audio pre-wiring

1 x Room Media Socket

1 x Local Audio Socket

Connected Room 4

Room Name

Multi-room Audio pre-wiring

1 x Room Media Socket

1 x Local Audio Socket

Connected Room 5

Room Name

Multi-room Audio pre-wiring

1 x Room Media Socket

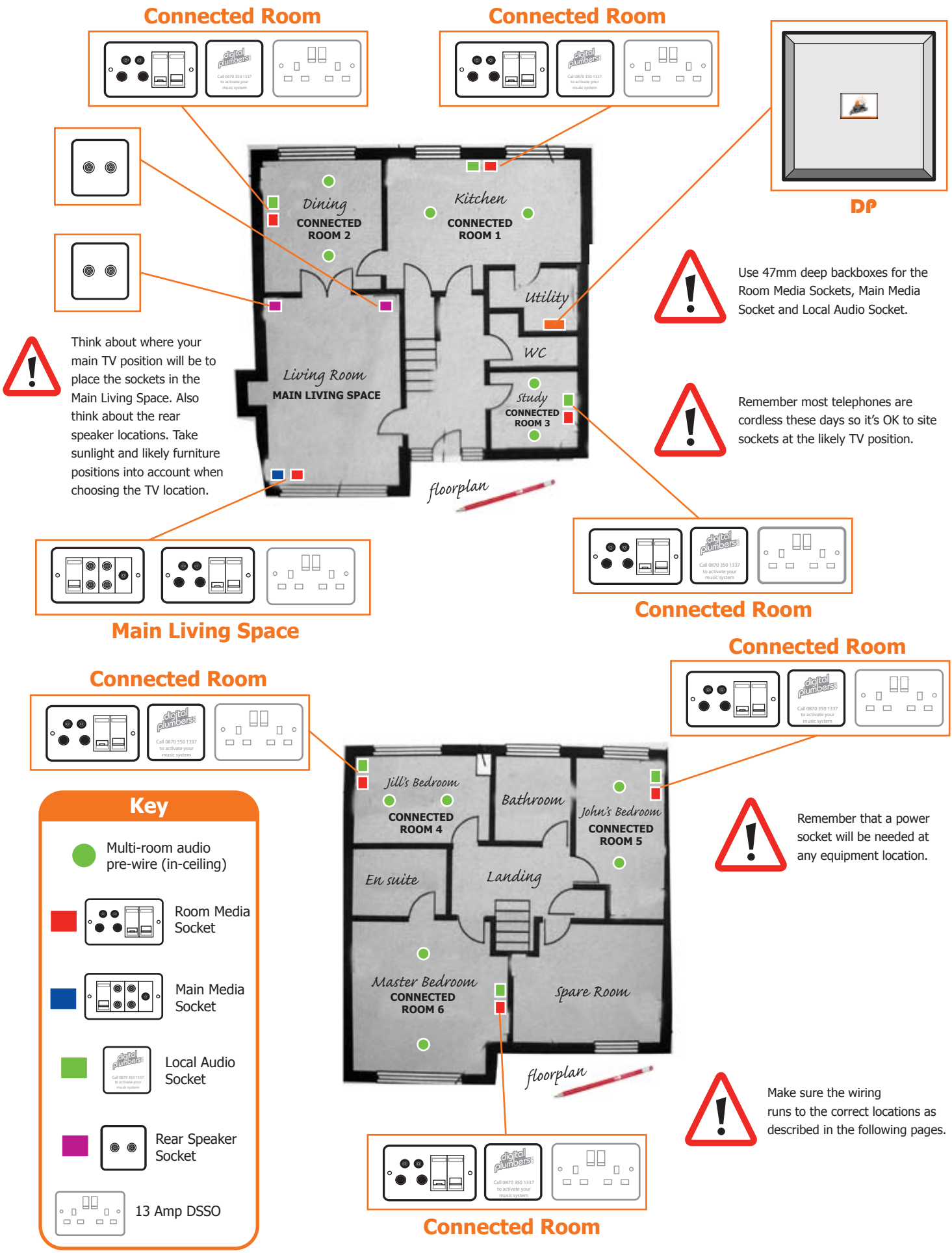
1 x Local Audio Socket

Connected Room 6

Room Name

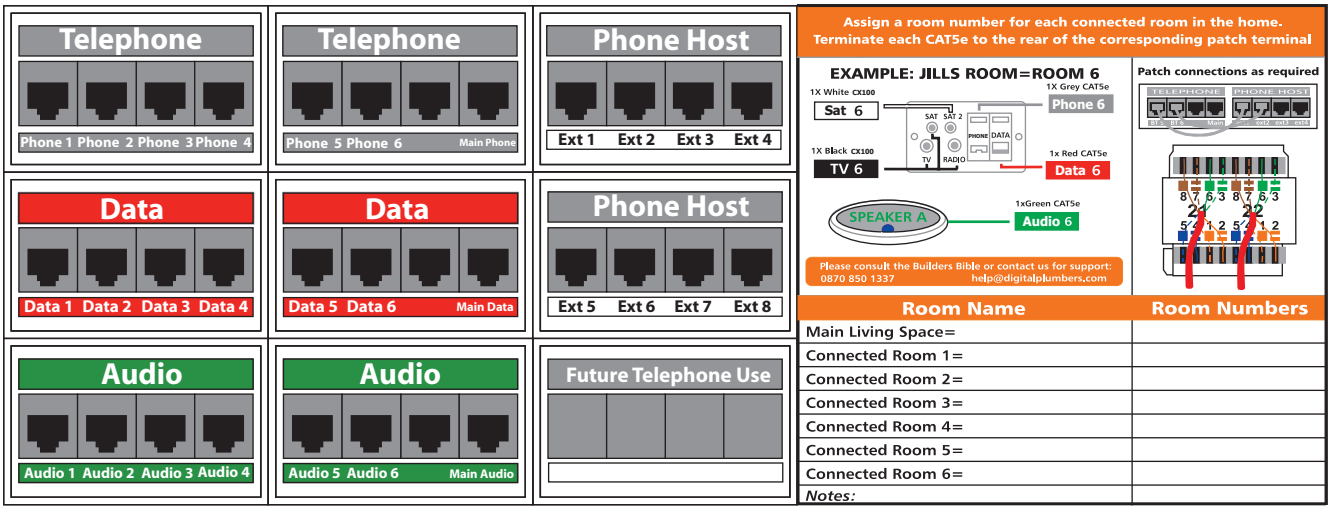
1.7 Cabling and Sockets - Example Home

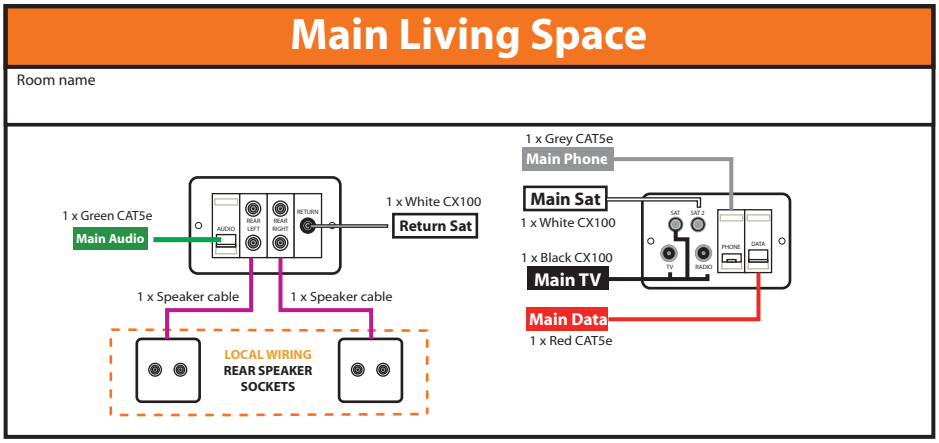
This shows an example positioning of the sockets within a four bed house flat or apartment. Only very basic plans are needed to design the layout. The **Main Living Space** is the Living Room, where the Satellite receiver and Hi-Fi are located. These will provide the distributed TV signal and Main Audio Source to the **DP**, which will then be distributed to the other **Connected Rooms**. **Locate a 13 Amp double switched socket next to each group of sockets** (shown in grey).

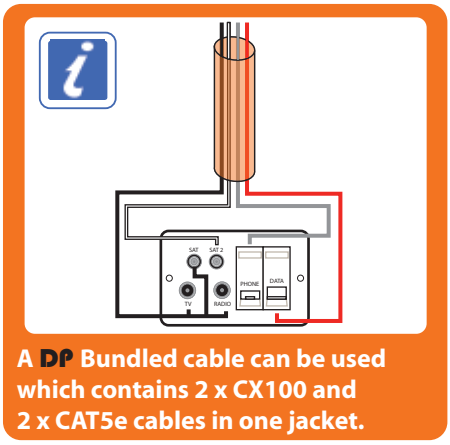


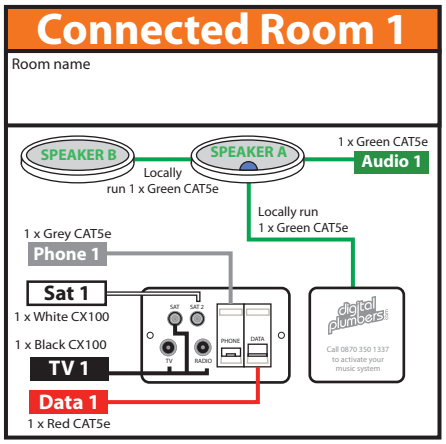
Cabling and Sockets - Room Labelling

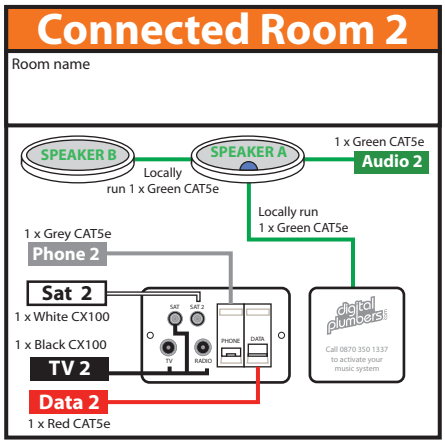
This page shows all the sockets (at both ends) to illustrate the labelling requirements. The DP colour-coded cables help simplify this process.

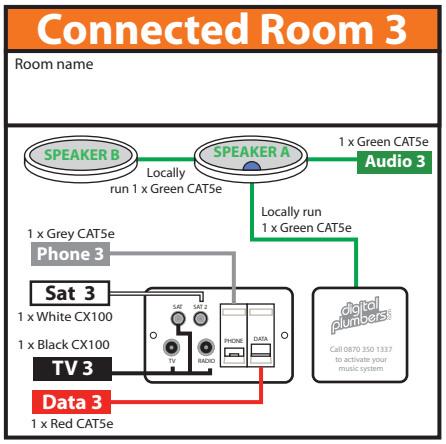


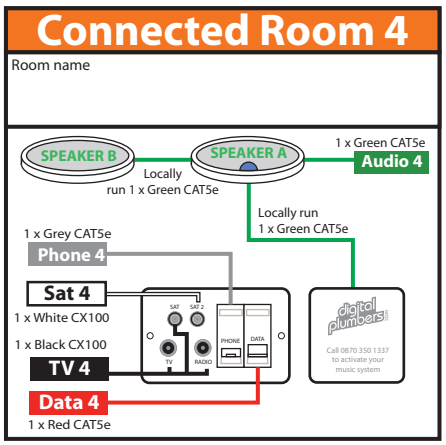


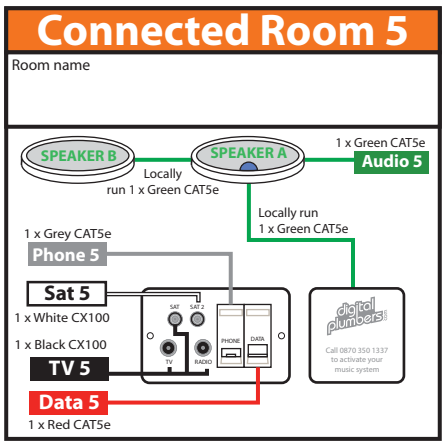


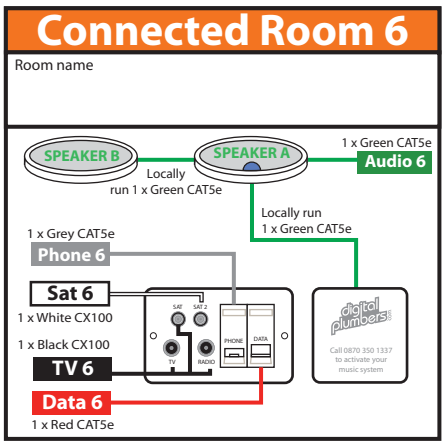






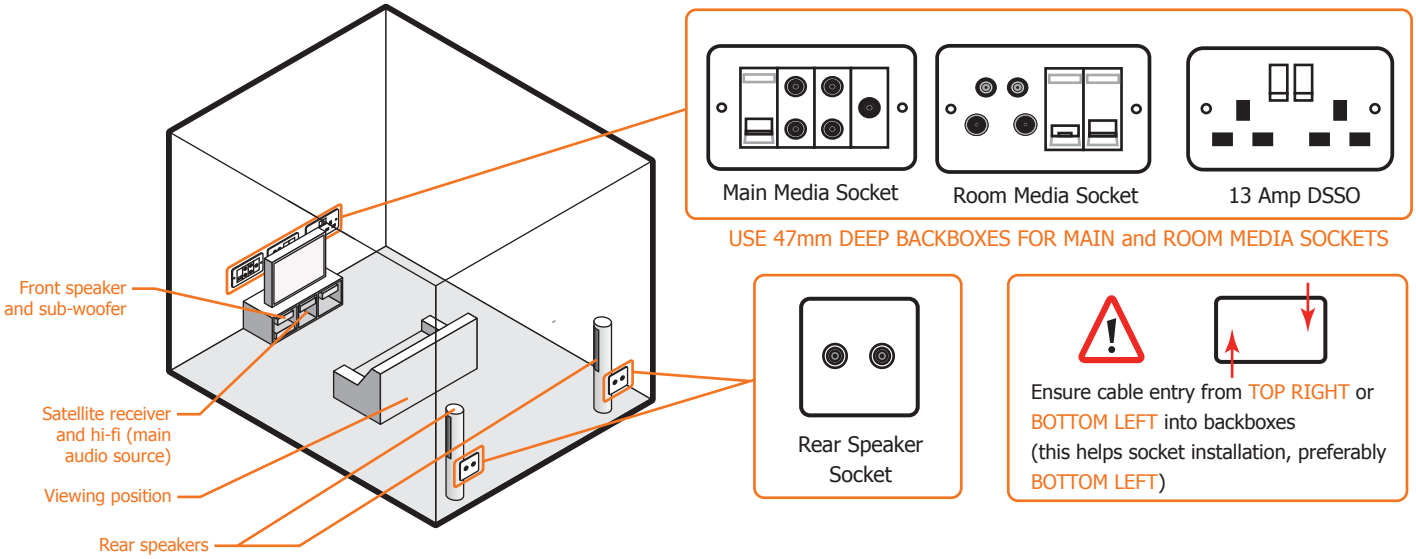






1.9 Cabling and Sockets - Main Living Space

The Digital Plumbers Wiring System requires a designated Main Living Space. This will typically be in the lounge or living room. In the Main Living Space you will need to locate a Main Media Socket and a Room Media Socket, these **MUST** be located next to each other. The Main Media Socket has wiring running back to the **DP**, and some wiring running locally within the room. The Main Media Socket provides the Main Audio Source to be distributed to the Connected Rooms. It also provides the distributed satellite or freeview signal to all Connected rooms. Locate these at the location of your satellite or freeview receiver box and hi-fi. The Main Media Socket will have local wiring running to two Rear Speaker Sockets. These provide the rear speaker signals for a Home Cinema System. Note below which cables are required to run to which location:

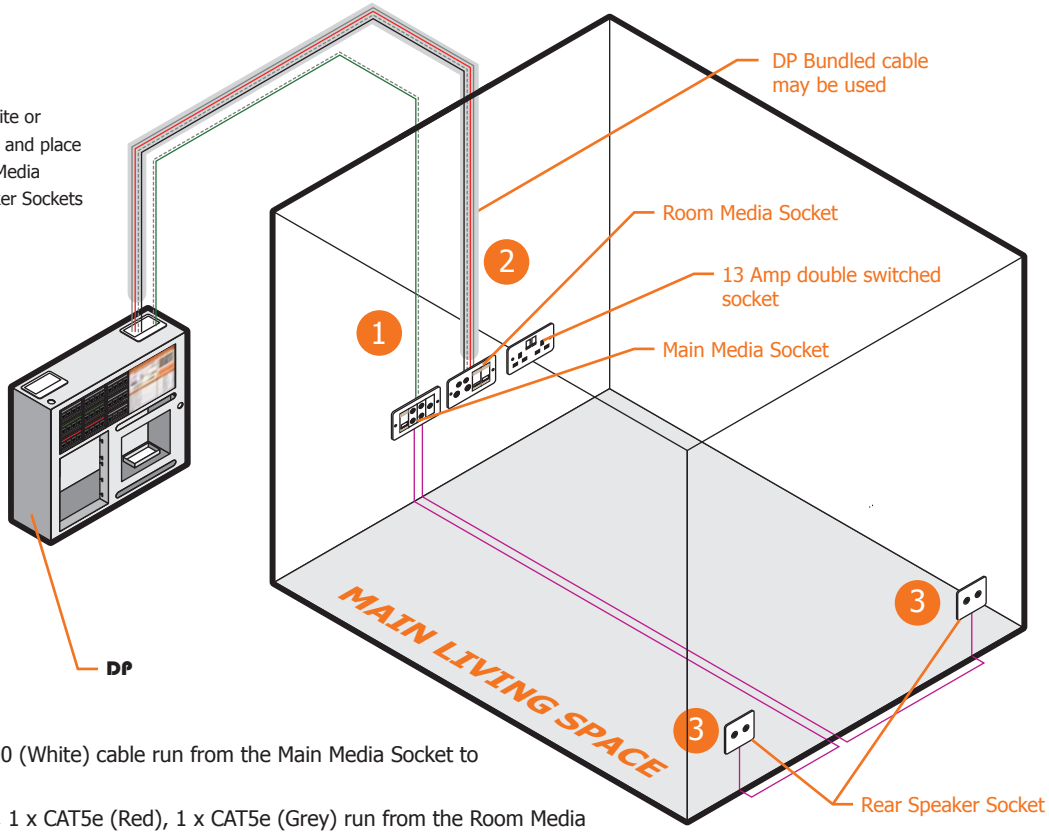


DECIDE

Decide where the main TV & Satellite or Freeview box is likely to be located and place the Main Media Socket and Room Media Socket there. Place the Rear Speaker Sockets behind the main viewing location.

Make sure the correct cables run to each location - to the **DP** or locally (if speaker cable) within the room.

Sockets in the Main Living Space will probably need to be at low level. Don't forget the main screen may be used as a computer display too, so think carefully before choosing the location.



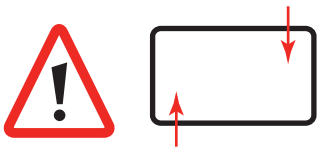
1. 1 x CAT5e (green) cable and 1 x CX100 (White) cable run from the Main Media Socket to the **DP**.
2. 1 x CX100 (Black), 1 x CX100 (White), 1 x CAT5e (Red), 1 x CAT5e (Grey) run from the Room Media Socket to the **DP**. These may be all bundled together in the jacketed cable.
3. 1 x Speaker Cable run to each Speaker Socket location (2 locations in total) from the Main Media Socket.

What you must do	What we do	Optional
Decide where the sockets will go. Have the electrical contractor run the cables. Make sure the cables are taken to the correct place. Ensure that 47mm deep backboxes are used.	Supply the equipment to site.	Audio, TV and other equipment can be purchased from Digital Plumbers any time.

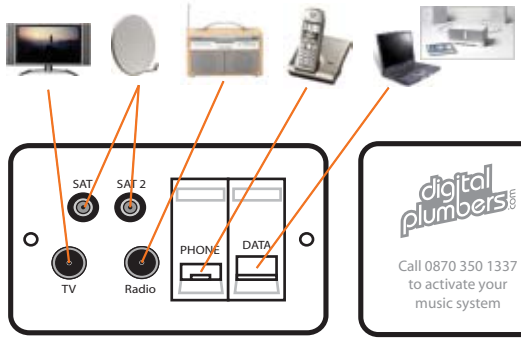
Cabling and Sockets - Connected Rooms

2.0

Once a Main Living Space has been chosen, the other Connected Rooms should be identified. These rooms can receive distributed Sky, Freeview, TV, FM, data and telecoms signals from the **DP**. These rooms wil be pre-wired for Multi-room audio. The **DP** supports a maximum of six Connected Rooms. Located in each of these will be 1 x Room Media Socket, 1 x Local Audio Socket and Audio pre-wiring in the ceiling for Multi-room audio. Locate the Room Media Socket and Local Audio Socket next to each other, typically where a TV / Hi-Fi may be located.

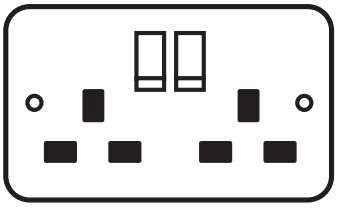


Ensure cable entry from TOP RIGHT or BOTTOM LEFT into backboxes (this helps socket installation, preferably BOTTOM LEFT)



Room Media Socket

Local Audio Socket



13 Amp DSSO

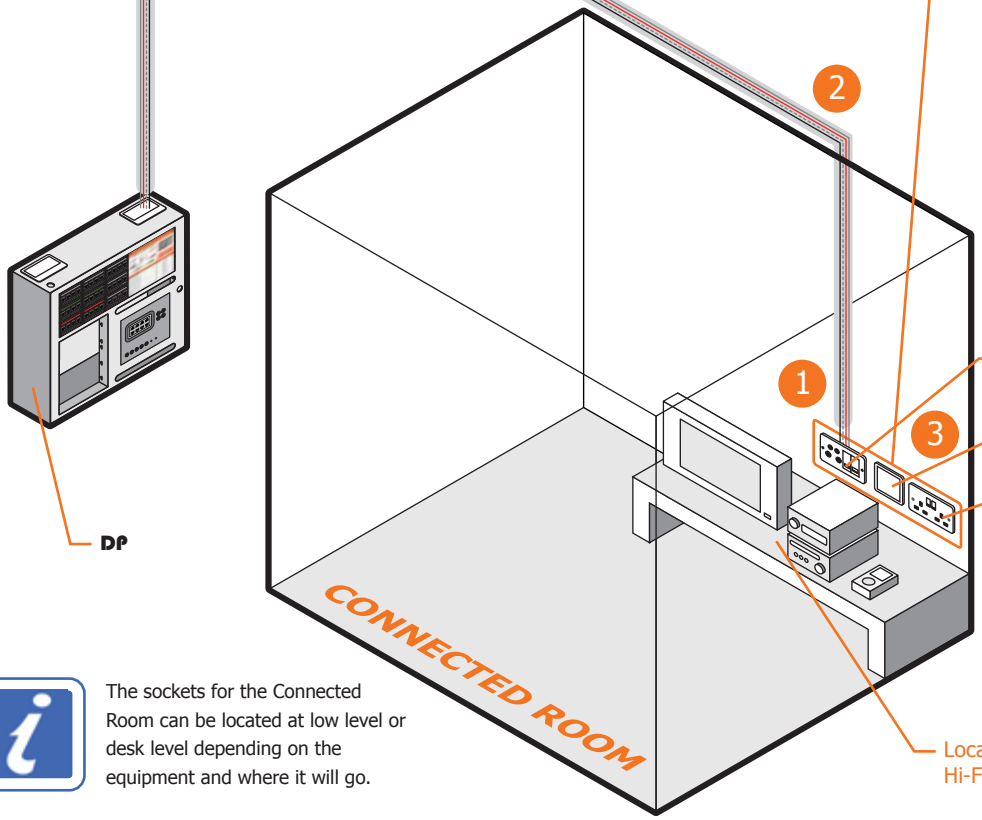
DP Bundled cable may be used

USE 47mm DEEP BACKBOXES FOR ROOM MEDIA and LOCAL AUDIO SOCKETS

Make sure the correct cables run to each location - each Connected Room can have wiring for Multi-room audio. This is described in the next section.

DECIDE

Decide where the TV and HiFi is likely to be located and place the Room Media Socket and Local Audio Socket there.



The sockets for the Connected Room can be located at low level or desk level depending on the equipment and where it will go.

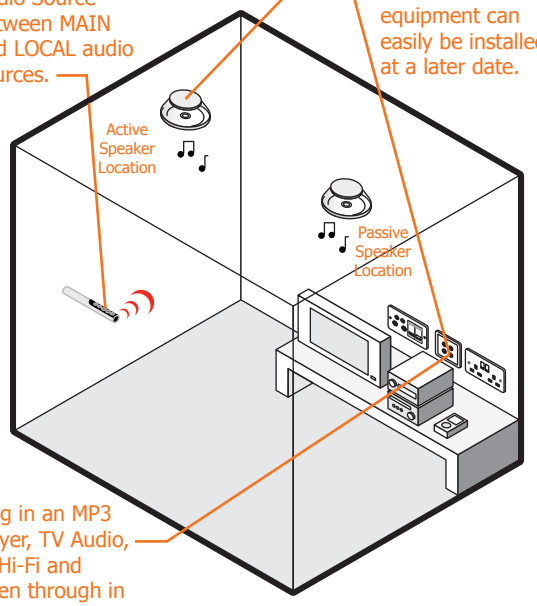
1. Locate the sockets where you will want your TV and Hi-Fi.
2. 1 x CX100 (Black), 1 x CX100 (White), 1 x CAT5e (Red), 1 x CAT5e (Grey) run from the Room Media Socket to the **DP**. These may be all bundled together in the jacketed cable.
3. The Local Audio Socket is pre-wired, with cabling running locally within the room. This is detailed in the next section.

What you must do	What we do	Optional
Decide where the sockets will go. Have the electrical contractor run the cables. Make sure the cables are taken to the correct place. Ensure that 47mm deep back boxes are used.	Supply the equipment to site.	Audio, TV and other equipment can be purchased from us at any time.

2.1 Cabling and Sockets - Connected Rooms

The Digital Plumbers Wiring System allows up to 6 Connected Rooms pre-wired for Multi-room audio. The electrical contractor will need to run the cable in two locations in the ceiling and to the Local Audio Socket. The Multi-room audio system can be activated at a later date by installing discreet in-ceiling speakers, adding some simple kit located at the **DP** and activating the Local Audio Socket. A single cable runs from the **DP** to the Local Audio Socket via the first designated ceiling speaker location where a coil is left. Another cable is run from a second designated ceiling speaker location (where a coil is left) to the first ceiling speaker location, connecting the two locations.

Optional Multi-room Audio



The Multi-room audio system allows the discreet in-ceiling speakers to listen to 2 audio sources - a distributed MAIN AUDIO SOURCE from the Main Living Space, and a LOCAL AUDIO SOURCE from an MP3 player or Hi-Fi located within the Connected Room. This room cannot listen to Local Audio Sources from other Connected Rooms.

The volume of the speakers can be controlled along with the bass, treble, start-up volume and maximum volume level, with a simple infra red handset.

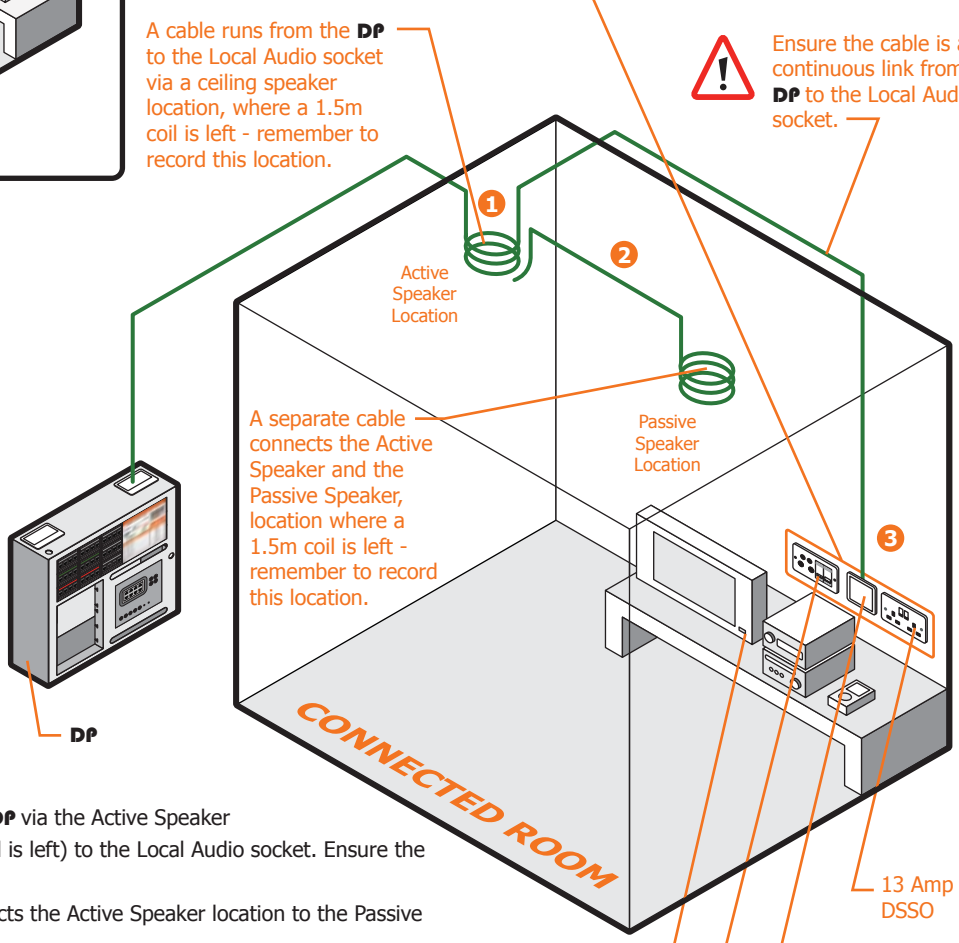
The Audio/Visual equipment located at the Main Living Space can be controlled remotely from each Connected Room using the Infra-Red Passing system built-in to the optional speakers.

This cable may take a different route to the Media Cable - see FAQ for examples.

The installation of the in-ceiling speakers requires 100mm depth and 195mm cutout - a template is provided with B.Bible.

Decide where the TV and Hi-Fi is likely to be located and place the Room Media Socket and Local Audio Socket there.

In-ceiling speakers do not require mains voltage to operate. Power is supplied through the CAT5e cable from the Audio Hub at the **DP**.



1. A single CAT5e (green) cable runs from the **DP** via the Active Speaker location in the ceiling void (where a 1.5m coil is left) to the Local Audio socket. Ensure the cable is a continuous link.
2. A separate single CAT5e (green) cable connects the Active Speaker location to the Passive Speaker location, where a 1.5m coil is left.
3. Leave a 30cm tail coiled in the Local Audio Socket backbox.

What you must do	What we do	Optional
Decide where the sockets will go. Have the electrical contractor run the cables. Make sure the cables are taken to the correct place. Ensure that there is enough room for installation of the in-ceiling speakers -100mm depth.	Supply the sockets and in-ceiling speaker template.	Audio, TV and other equipment can be purchased from Digital Plumbers at any time.

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