

Home cabling system planning tables

The tables that follow are designed to aid the home cabling system design process resulting in the basis of system documentation and a parts list.

The first three tables consider Cat5e cabling, co-ax cabling and the cabinet hardware requirements separately.

The fourth table is provided to allow cabinet patch panel assignments to be made

The following notes are given to clarify the table use:

Co-ax cabling

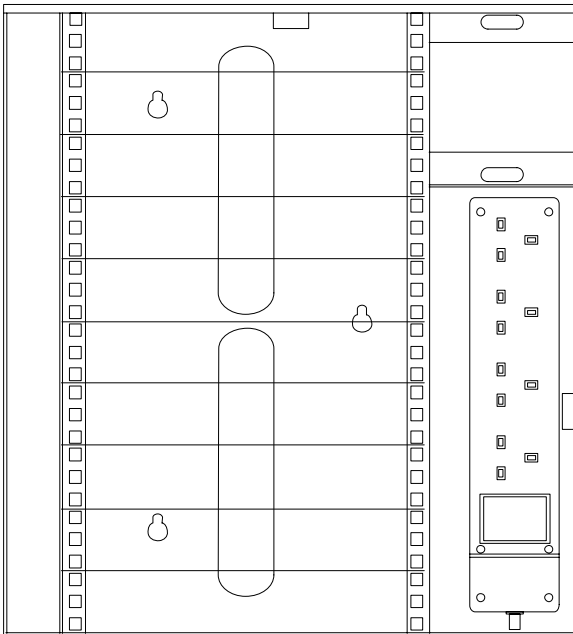
- ◆ Identify each position where an outlet is required by the room name and wall location. This can be a descriptive name or drawing reference.
- ◆ Identify the plate type required. At least one triplex plate is required.
- ◆ Note extra hardware requirements for each outlet. It is normal for the expander and diplexer to be installed as a pair.

Cat5e cabling

- ◆ Identify each position where an outlet is required by the room name and wall location. This can be a descriptive name or drawing reference.
- ◆ Identify if the plate required is a single or a double.
- ◆ Enter the number of terminations of each type required for the location. RJ-45 and BT relate to module types which may be either Euro or CCS depending on the face plate type (signifying this against the entry will aid calculation of part requirement totals.) Direct termination signifies that a module is not required. For example where a cable run terminates onto the extension wiring facility of a BT master socket or a pair of speakers in a multi-room audio system.
- ◆ The port number allocation columns allow patch panel ports to be allocated as the design is built up. Maintaining these entries will make identification of cabinet component requirements easier.
- ◆ The 'Blank' column is used to signify the number of blanks required to fill empty faceplate positions for the location considered.
- ◆ The VC column can be used to account for voice converter requirements at a location.

Cabinet Planning

Part No.	Description	U Space	Qty
009-003-001-02	2 Line Telephone Service Panel	1	
009-001-016-00	12 Way Enhanced Cat5 Patch Panel Black	1	
009-001-016-04	12 Way Enhanced Cat5 Patch Panel Blue	1	
009-001-016-08	12 Way Enhanced Cat5 Patch Panel Red	1	
009-003-002-01	TV Distribution Panel	4	
009-001-021-08	1U Blank Panel	1	
009-001-020-00	1U Brush Panel	1	

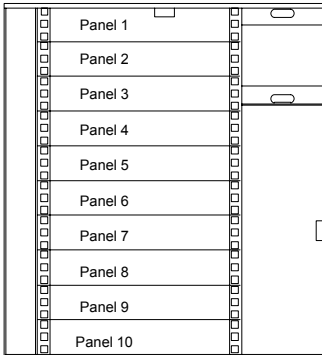


Cabinet Layout Notes

NOTE: Each U position has been marked to aid planning. Either write in the item planned for each space or alternatively cut out the component symbols on page 35 and position as required.

Additional Hardware		
Part No.	Description	Qty
010-100-100-08	8 port LAN Switch	
CABLEKIT	Router connection kit 2 * secondary Voice Converter, 2 * Micro filter, 1 * BT / RJ-45 Link Lead, 1 * RJ-11/ RJ-45 Link Lead	
VELCROKIT	Velcro fixing kit	
009-000-001-00	Individual Cage Nut	

Cabinet Panel Outlet Assignment



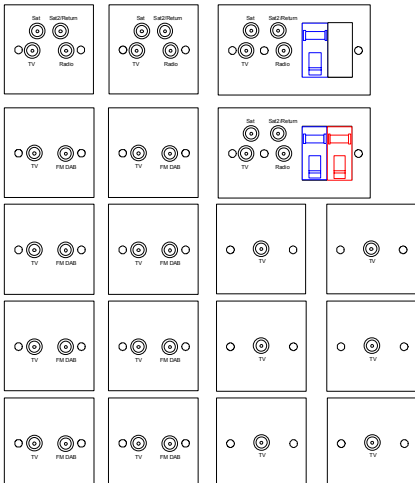
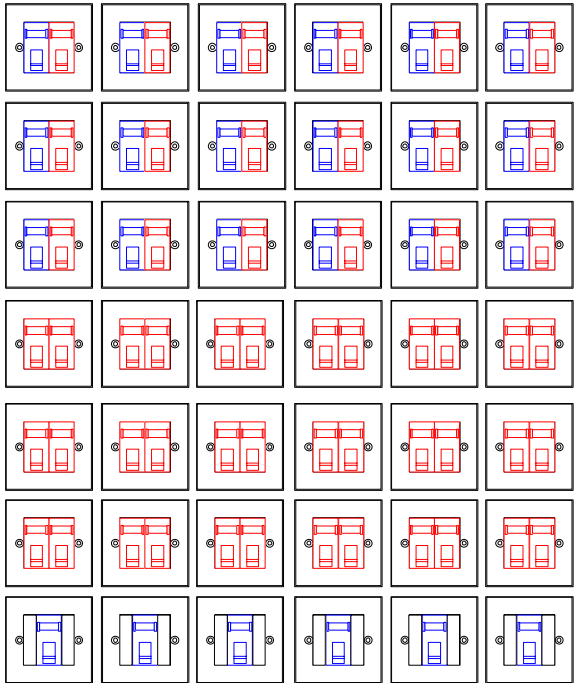
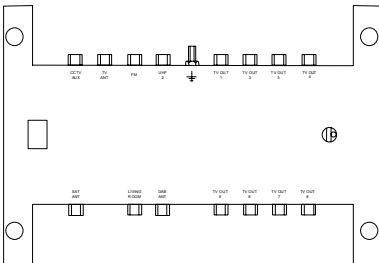
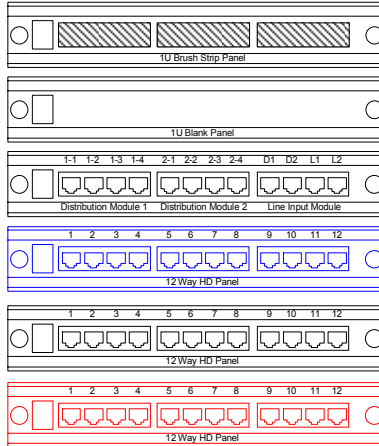
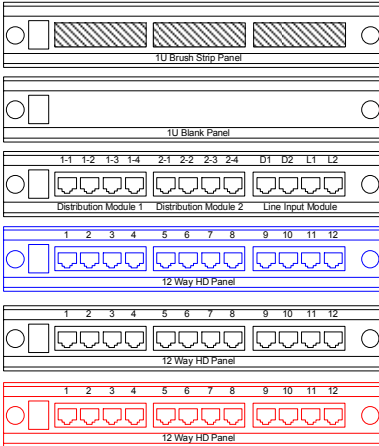
No	Description
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Port No.	Panel Number				
	1	2	3	4	5
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Room / Location					

Port No.	Panel Number				
	6	7	8	9	10
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Room / Location					

Planning Symbols

The symbols below can be used to aid planning a cabling system. The panels fit the cabinet planning diagram on page 32. Wall outlet symbols may be attached to drawings for directing system installers or documentation for home owners.



Cabling System Application Notes

The following application notes have been designed to provide a brief introduction to each of the typical applications which use the home cabling system specified in this guide.

Each application note follows a format describing the application in terms of what it does, how it uses the cabling system, the connection types commonly encountered and the type of cable required. This information is summarized in the table on page 7.

Typically encountered exceptions and alternative options for realizing the application are also provided however it must be understood that the information provided is far from exhaustive in this area.

Telephone service distribution

What does it do?

An incoming telephone service can be provided to one or more points within the dwelling. Fax machines and dial-up computer modems can connect. ADSL broadband services can also be routed to a room location however the use of micro-filters will need to be considered.

What do I need to connect to the cabling system?

Telephones connect at the room location. At the central location a telephone host panel / module is required to accept the incoming service and allow it to be patched through to multiple room outlets.

What type of cable is required?

While not required Cat5e or Cat6 is recommended – particularly if terminating to RJ-45 at the room locations.

How is it wired?

Star wired – each room outlet has a dedicated cable running back to the central location where it terminates onto a patch panel.

What connections are required?

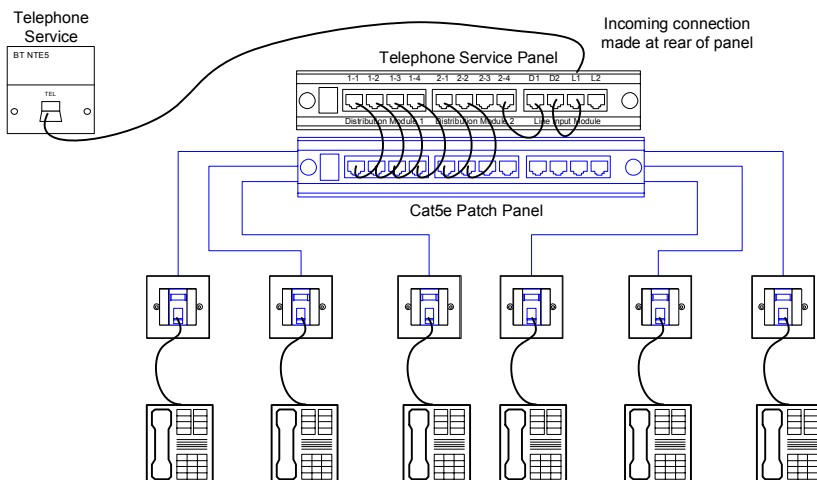
The room locations can be either sockets for BT type plugs or RJ-45 (requires the use of plug-in voice converters.)

Are there any exceptions?

A phone line can be wired as a daisy chain from the incoming service to each outlet location however this does not fit in with the concept of general purpose structured cabling.

Alternative solutions?

A phone system can be used in which case the host panel is not required. The phone system will be situated close to the central location and will need to connect to both the incoming service and the room outlet patch panel



RF Distribution: TV, Radio & Satellite

What does it do?

Broadcast TV, Radio and satellite signals are distributed to rooms in the dwelling. The selected satellite channel from a DigiBox may be viewed on TVs in other rooms. Remote control of the satellite receiver may be possible.

What do I need to connect to the cabling system?

A TV signal distribution unit is required at the central location. Radios, TVs or satellite receivers / set top boxes are required in the room locations. 'Magic eye' remote control receivers may be used to allow remote control of a satellite receiver in another room.

What type of cable is required?

Co-ax cable is required for all aerial and room locations.

How is it wired?

Star wired between the central location and all room / aerial locations. Aerial and satellite dish signals are brought to the central location, room points provide connection to TVs and radios. Multiple cable runs to the same location may be required (see instructions for your TV distribution system.)

What connections are required?

Room outlet locations have connectors specially designed for RF signal connection; Co-ax and F-type connectors are typical.

Are there any exceptions?

The room(s) where satellite receivers / digi-boxes are to be placed often require special consideration. Some distribution systems are designed to work with particular configurations and may not offer the same functionality for all uses.

Alternative solutions?

Some cabling systems use a proprietary twisted pair cable allowing RF signals to run over the same cabling as used for data, audio or telephone connections. Higher quality AV signals offering a better picture and stereo sound can be sent on Cat5e and Cat6 cabling using signal conditioning equipment. Multi-source AV distribution solutions for use on Cat5e or above are not uncommon.

Computer / Data Networking - LAN

What does it do?

Equipment designed to communicate using the Local Area Networking (LAN) technology Ethernet can be connected. Computers and games consoles can be connected to communicate with each other or with equipment for sharing an Internet connection. Media centre computers and other digital media devices can share video, music and image files with this type of connection.

What do I need to connect to the cabling system?

A LAN switch is connected at the central cabinet location. PCs, digital media devices, network printers, games consoles and internet telephone devices are connected in room locations. For internet sharing a router with connection to the internet service is required, this will also be connected to the switch. The home cabling system enables the connection of room located data networking devices to the switch located in the cabinet. Alternatively devices which do not need to be present in room locations may be installed at the cabinet location and directly connected to the switch.

What type of cable is required?

Cat5e or Cat6

How is it wired?

Star wired – each room outlet has a dedicated cable running back to the central location where it terminates onto a patch panel.

What connections are required?

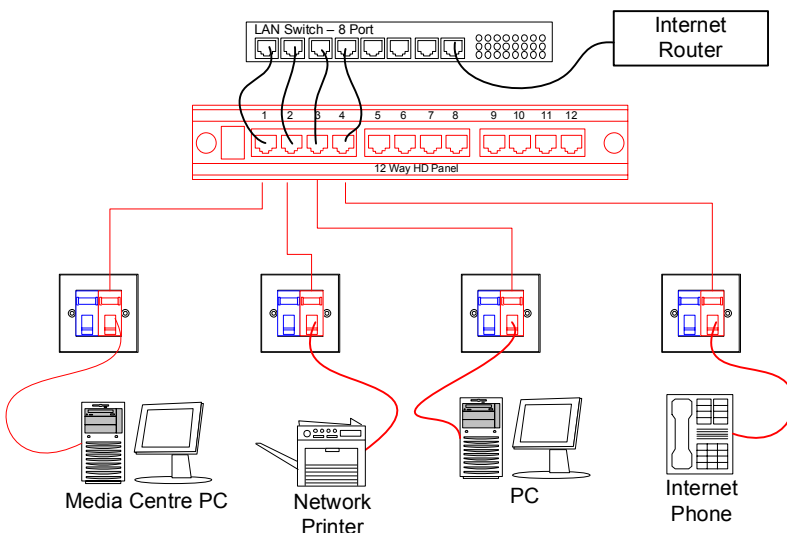
RJ-45

Are there any exceptions?

No ne

Alternative solutions?

Wireless and HomePlug for power line networking.



Multi-room Audio

What does it do?

The output from one or more audio sources can be listened to in rooms where connected speakers are installed. Sources may be situated at the central location or in rooms where suitable connections points are installed. Depending on the system installed features can include control to allow selection between different sources or control of the selected source itself. This may be via a wall mounted key pad or an infra-red based remote control system.

What do I need to connect to the cabling system?

There will be a piece of equipment located centrally which has source inputs and 'zone' outputs. Permanently installed room speakers will have 'hidden' wires connected. Source input plates and key pad controls may be required.

What type of cable is required?

Typically Cat5e.

How is it wired?

Depending on the complexity of the system it may be star wired from the central location to speakers and source input connection points. Alternatively it could be a combination of star wired and daisy chain. A thorough understanding of the system you are designing for is required!

What connections are required?

Generally the only connection will be a source input plate offering Phono type sockets. However, some systems are available with adaptors which allow audio source signals to be sent from a room location to the central location using typical Cat5e cabling presented in a room location on an RJ-45 outlet.

Are there any exceptions?

Alternative solutions?

There are many ways to achieve multi-room audio solutions. The description is based on the QED System Line Modular solution.

AV Distribution

What does it do?

High quality analog component/composite video combined with audio signals can be sent across Cat5e / Cat6 cabling to equipment such as TVs.

What do I need to connect to the cabling system?

Transmit and receive adaptors have to be used to condition AV signals for transmission on Cat5e/Cat6 cabling. This application may be used to create direct point-to-point links from a source to a receiver – in this case only the adaptors are required – a patch lead may be required at the central location if linking a transmitter in a room to a receiver in a different room. Alternatively equipment connected to the centre of the network can provide a switching function allowing multiple receivers to select from one of a number of connected sources.

What type of cable is required?

Cat5e or Cat6

How is it wired?

Star wired – each room outlet has a dedicated cable running back to the central location where it terminates onto a patch panel.

What connections are required?

The adaptor typically has an RJ-45 for the cabling system connection and RCA or SCART for connection of the source / receiving equipment.

Are there any exceptions?

Some systems are available for use with dedicated co-ax cable.

Alternative solutions?

Digital component can be connected across Cat5e / Cat6 cable with suitable adaptors.

Worked Design Example

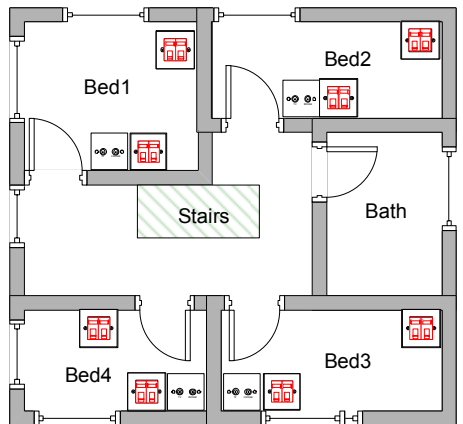
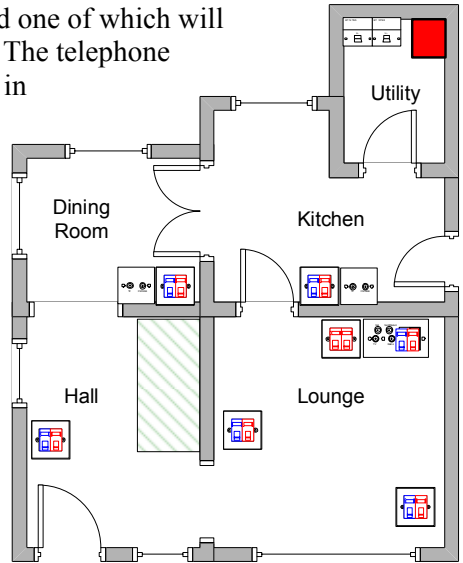
Four Bedroom House

Telephone distribution for 2 lines is required one of which will deliver ADSL broadband into the dwelling. The telephone service will be presented in the utility room in close proximity to the cabinet.

Downstairs wall outlets will provide a mixture of BT and RJ-45 connections. All BT sockets will be connected to one line. The second line will be wired to a single device in one of the bedrooms. A BT Home Gateway ADSL router providing internet telephony and WiFi will be situated in the hall.

Upstairs outlets will provide RJ-45 connections only. Upstairs wired telephones will require a voice converter however the trade off between cosmetic impact / convenience concerns and flexibility lead to this conclusion. Bedrooms one and four are to have voice converters installed.

All main living spaces are to be provided FM and TV signal by the RF distribution system. Accommodation for a Sky Digibox will be made at the main TV viewing location in the Lounge. The ability to use the cabling system for AV distribution and audio source connection is desirable.



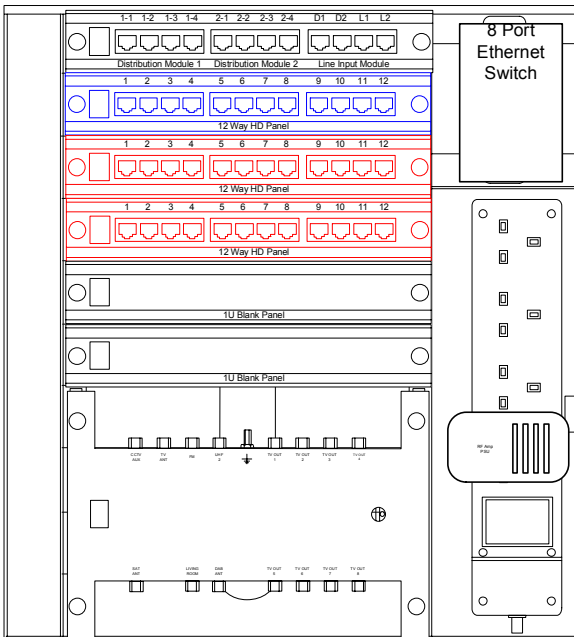
Cat5e Cabling Plan										
Room & Location	Plate		Termination**			Port No.		Blnk*	VC	Len (m)
	Sgl	Dbl	RJ	BT	Direct	Data	Voice			
Lounge MSWP			1 E	1 E		1	1			34
Lounge TV	1		2 C			2, 3				22
Lounge Window	1		1 C	1 C		4	2			22
Lounge Internal	1		1 C	1 C		5	3			24
Kitchen	1		1 C	1 C		6	4			16
Dining Room	1		1 C	1 C		7	5			20
Hall	1		1 C	1 C		8	6			28
Bed 1 Window	1		2 C			9, 10				10
Bed 1 Internal	1		2 C			11, 12		1		12
Bed 2 Window	1		2 C			13, 14				8
Bed 2 Internal	1		2 C			15, 16				12
Bed 3 Window	1		2 C			17, 18				16
Bed 3 Internal	1		2 C			19, 20				20
Bed 4 Window	1		2 C			21, 22		1		24
Bed 4 Internal	1		2 C			23, 24				30

Parts List											
CCS Single wall plate 008-001-002-06	14										
CCS Double wall plate 008-001-003-06											
CCS Cat5e RJ-45mod 008-001-001-09			23								
Euro Cat5e RJ-45 mod 008-001-000-50			1								
CCS Secondary BT 008-001-001-50				5							
Euro Secondary BT 008-001-000-80				1							
CCS 1/4 Blank 008-001-001-50											
CCS Voice Converter 007-006-003-15x									2		
Cat5e Cable – 305m box 001-003-003-62											298m

NOTE: * Each empty space requires two blanks.
 ** Specify Euro RJ-45 / BT modules for Euro wall plates including the Double Triplex TV plate.
 Select CCS modules if specifying the plates listed above. Remember to consider this difference when totaling for the parts list.

Cabinet Planning

Part No.	Description	U Space	Qty
009-003-001-02	2 Line Telephone Service Panel	1	1
009-001-016-00	12 Way Enhanced Cat5 Patch Panel Black	1	
009-001-016-04	12 Way Enhanced Cat5 Patch Panel Blue	1	1
009-001-016-08	12 Way Enhanced Cat5 Patch Panel Red	1	2
009-003-002-01	TV Distribution Panel	4	1
009-001-021-08	1U Blank Panel	1	1
009-001-020-00	1U Brush Panel	1	



Cabinet Layout Notes

The ADSL router is to be installed in one of the rooms. An 8 port switch is required in the cabinet.

The Router connection kit is required to provide required micro filters and link leads.

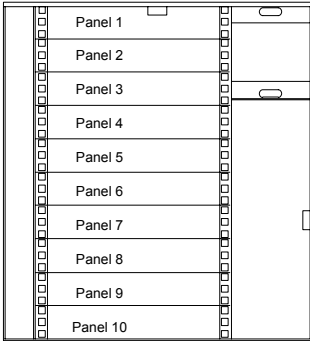
The distribution modules will be patched together due to the number of telephone connections required.

The 2nd line needs to be patched to the outlet in Bed 4 with the voice converter.

NOTE: Each U position has been marked to aid planning. Either write in the item planned for each space or alternatively cut out the component symbols on page 35 and position as required.

Additional Hardware		
Part No.	Description	Qty
010-100-100-08	8 port LAN Switch	
CABLEKIT	Router connection kit 2 * secondary Voice Converter, 2 * Micro filter, 1 * BT / RJ-45 Link Lead, 1 * RJ-11/ RJ-45 Link Lead	
VELCROKIT	Velcro fixing kit	
009-000-001-00	Individual Cage Nut	

Cabinet Panel Outlet Assignment



No	Description
1	<i>Telephone service panel</i>
2	<i>Telephone wall outlet patch panel</i>
3	<i>RJ-45 wall outlets</i>
4	<i>RJ-45 wall outlets</i>
5	<i>Blank</i>
6	<i>Blank</i>
7	<i>RF Distribution System</i>
8	<i>RF Distribution System</i>
9	<i>RF Distribution System</i>
10	<i>RF Distribution System</i>

Port No.	Panel Number				
	1	2	3	4	5
1		<i>Lounge TV / Sky box</i>	<i>Lounge TV</i>	<i>Bed 2 Window</i>	
2		<i>Lounge Window</i>	<i>Lounge TV</i>	<i>Bed 2 Window</i>	
3		<i>Lounge Door</i>	<i>Lounge TV</i>	<i>Bed 2 Internal</i>	
4		<i>Kitchen</i>	<i>Lounge Window</i>	<i>Bed 2 Internal</i>	
5		<i>Dining Room</i>	<i>Lounge Door</i>	<i>Bed 3 Window</i>	
6		<i>Hall</i>	<i>Kitchen</i>	<i>Bed 3 Window</i>	
7			<i>Dining Room</i>	<i>Bed 3 Internal</i>	
8			<i>Hall</i>	<i>Bed 3 Internal</i>	
9			<i>Bed 1 Window</i>	<i>Bed 4 Window</i>	
10			<i>Bed 1 Window</i>	<i>Bed 4 Window</i>	
11			<i>Bed 1 Internal</i>	<i>Bed 4 Internal</i>	
12			<i>Bed 1 Internal</i>	<i>Bed 4 Internal</i>	
Room / Location					

Port No.	Panel Number				
	6	7	8	9	10
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Room / Location					

Frequently asked questions

Q. My equipment does not have a connector on it that one of your patch cables will connect to. I can not get a cable that links my equipment to the home cabling system.

A. Where direct support is not available there is normally a need to supplement the equipment with a converter which conditions the signals in such a way as to provide successful transmission on this type of cabling

Q. My telephone / modem / fax has the wrong type of plug for the wall outlet sockets. What can I do?

A. Firstly make sure that you have the ability to distribute a telephone line using your home cabling system. If so, choose a wall outlet in a room which is patched into the telephone service at the cabinet and connect a voice converter to the outlet. Connect the equipment into the BT socket provided by the voice converter.

Q. My ADSL router has a smaller version of an RJ-45 and looks like it will connect to a RJ-45 socket, is this ok?

A. No – the smaller RJ-11/RJ-12 will damage the RJ-45 socket. If you are connecting an ADSL router you will need to use a voice converter into which you then connect a standard micro filter. This will then give you the correct connector for your router. Alternatively it is possible to purchase RJ-45 to RJ-11/12 converters.

Q. I can not get TV signal from any of the TV wall outlets in any room other than the living room.

A. Check to see if anything is connected to the Sat2 / Return connection on the wall outlet situated in the main TV location. If nothing is connected to this socket there is no RF signal being fed to any of the rooms and this is the problem. You need to connect the incoming RF signals to the Sat2/Return connection. Either connect the RF2 output from your Sky™ DigiBox to Sat2/Return or, if not using Sky, you will need to use a ‘Y’ splitter to allow connection of the terrestrial signal to both the TV and the Sat2/Return connection.

© Connectix Limited 2009

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, including photocopying and recording without the written permission of the copyright holder application for which should be addressed to the publisher. Published by Connectix Limited.