

Nexus Multimedia

The revolutionary new system that distributes audio, video, telephony and data around your home.



User manual

Please read and save these instructions.

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Introduction

Thank you for purchasing the Nexus system from AVNex Ltd. Nexus offers a unique capability to distribute and control entertainment, communications and media systems throughout your home, office or building.

Through the use of a simple hand-held remote control, the user can hear and see any of the audio and video sources plugged into the system throughout the building. These devices can also be controlled with their original remote controls, from any where in the building via the Nexus's integral infra-red passthrough system.

The function of a socket in any place may be changed within seconds at the Nexus Hub, from telephone to audio-visual, or data.

Safety

- Make sure that both the hub and the patch panels are securely fitted to the wall .
- Make sure the Nexus is in a dry place where it will not get damaged or cause obstruction.
- Never dismantle the Nexus Hub.
- Make sure that the Nexus is fully disconnected from patch panels and power supply before attempting to move the unit.
- Your Nexus should be positioned out of the reach of small children, or in a locked cabinet - Nexus Cabinets and Mounting frames are available from AVNex Ltd.
- It is advisable to turn off the Nexus when not in use, i.e. when away on holiday. The telephones will continue to work even when the power is off.

Quick start guide

Before connecting Nexus

Before connecting your Nexus make sure that:

- every RJ45 socket has been tested for continuity.
- all sockets are properly numbered.



IR transceiver



Connect your AV equipment

Plug every piece of AV equipment into an RJ45 socket using the Nexus adaptor cables and adaptor cable kit provided. The cables connect to composite video and line level audio on your appliance. Adaptors are provided for all types of audio and video equipment.

Infra red control

For AV sources eg DVD player, VCR, camera, CD player, PC video out, TV tuners, the IR emitter on the Nexus adaptor cable should be fixed over the remote sensor on your device.

For AV outputs such as TVs, screens, active speakers and amplifiers, the IR receiver on the Nexus adaptor cable should be placed so that it points into the room.

Telephones and ethernet

Using the 'Telephone Line In' cable, connect your Master tel line socket to a CAT5 socket and patch the socket into the Green 'Line In' at the hub. Use the 'Telephone Line Out' adaptor cables to connect telephones at any RJ45 socket.

Labelling

It is useful to label the Nexus label plates with colour coded magnetic labels as you connect your equipment.

Patch the Nexus

The patch panel numbering corresponds to the numbers on RJ45 sockets around your house. Using the patch cables, connect your patch panel sockets to the correct Nexus ports.

- Video players, pay TV boxes, music players, cameras etc. are connected to the red Audiovisual Source ports. Numbering on the sources corresponds to numbering on your remote control.
- TVs, active speakers, amplifiers etc patch to the blue AVoutputs.
- Telephones patch to the green telephone ports
- Computer network cards patch to the yellow ethernet ports.

Use your Nexus.

Plug in the Nexus and switch TVs to AV and Amplifiers to Aux. By using the Nexus remote control at any TV/ Speakers you can now selectively watch and listen to all your music and video in any room. You can control any sources you are watching by using its own remote.

Showing your sources on the On Screen Display

Choose the source you wish to label.

Press Alt + Menu

Using the channel keys select a name for that source. Press SELECT to confirm.

Volume control.

You can set volume for every source to every output in order to harmonise volume levels. It is best to keep the source volume and Nexus volume low in order to improve quality.

Nexus kit list

Nexus Multimedia hub

- 6 or 12 AV source sockets (red)
- 6, 12 or 18 output sockets (blue)
- telephone hub (green) (optional)
- ethernet hub (yellow) (optional)
- Nexus AV adaptor cables - one per source and output.
- Remote controls - one per output.
- AAA batteries - two per remote.
- 6 x Mounting bolts and washers.
- Red, Blue, Yellow and Green magnetic labels.
- Red patch cables 0.5m (one per source)
- Blue patch cables 0.5m (one per output)
- Adaptor cable kit with adaptors from phono to:
 - 4 x SCART
 - 2 x 3.5mm audio jack male
 - 2 x 3.5mm jack female
 - 2 x BNC video
 - 2 x Phono female

Telephone and ethernet option

- 1 x Telephone inlet adaptor cable (two lines)
- 2 x Telephone outlets - 2 lines
- 2 x Telephone outlets
- 4 x Yellow and Green patch cables 0.5m.

Nexus cabinet option

- Cabinet in any finish
- Shielded patch panels x 48
- Labelling plates



Nexus Multimedia hub
with Nexus cabinet



Nexus AV Cable



Nexus Remote

Cabling your house

The Nexus requires a Category 5 cabling infrastructure (STP). Floodwiring with shielded category 5 data cable (STP) will provide you with a “Nexus ready” infrastructure that is futureproof and flexible to changing needs.

Where should I locate my RJ45 sockets?

There are some simple rules to ensure your house is “Nexus ready”.

1. As a general rule place 2 double sockets (4 total) in each room next to the power sockets. To ensure that sockets are available from as many areas of a room as possible, it is best to locate sockets at opposite ends of the room.
2. Put the hub in a place which is dry, easy to cable to and readily accessible for ‘patching’.
3. Place extra RJ45 sockets where you will definitely want more equipment, eg in the living room or office.
4. If your services are not next to the hub, put an extra socket next to any incoming service so you can distribute it back to the hub.
 - ISDN
 - Master telephone
 - Terrestrial TV/FM/ digital radio/digital TV
 - Satellite or Cable TV

What type of cable and sockets?

Use shielded category 5, 5e or 6 cable with shielded RJ45 sockets. Please contact us if you require further information.

Location of Nexus hub

The NEXUS can be mounted in a 19 inch rack or in a Nexus cabinet. It should be placed in an area that is easy to bring cable to, and should be accessible so that you can reconfigure your system when necessary. In the study or under the stairs would be an appropriate place. Keep away from moist or dusty environments.

How many sockets do you need to be “Nexus ready”?

1. One for each audio and video output such as the following:
 - TV with in built speakers
 - Active speakers
 - Amplifier
 - PC music server
 - Video recorder.
2. One socket for each audio and video source device such as:
 - DVD player,
 - CD player,
 - Hifi output,
 - Camera,
 - PC audio and video
3. One for 1 or 2 telephone lines.
4. One for each PC to be networked

Some of your equipment, such as a Hifi or a PC, will need more than one socket. A hifi needs one socket for its output so that you can hear the CD player around the house, and one for its Aux input to receive audio from the other devices in the house. A PC may require up to 4 sockets, one in order to use a TV card to view the PC as a TV, one for using a PC as a music server or DVD player (with video card), one for telephone line to the modem and one for ethernet.

NEXUS Connecting equipment



Connecting AV equipment

Before connecting Nexus

Before connecting your Nexus make sure that:

- every RJ45 socket has been tested for continuity.
- all sockets are properly numbered.
- if you are planning to use the data network at high data rates, you should have the network tested by a professional cabling company.

Once you have a Nexus ready infrastructure and the Nexus hub is in place you are ready to set it up and begin using it right away.

Decide what to put where

TVs in the lounge, bedroom and kitchen. Video in the lounge. You can put your equipment anywhere as long as it is in reach of a spare RJ45 socket.

Connect your equipment

Plug every separate piece of AV equipment into an RJ45 socket using the Nexus adaptor cables provided. Audiovisual equipment can be divided into two separate categories, Sources and Outputs. Nexus adaptor cables are multi-purpose and may be used to connect both sources and outputs. The Nexus adaptor kit allows you to connect a wide variety of equipment. If you require further adaptors or signal converters please enquire.



Nexus adaptor cable

RJ45 - Phono plugs + IR transceiver.

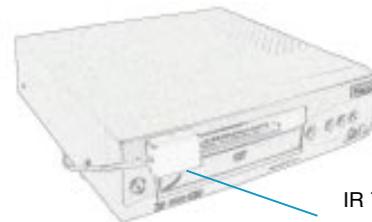
Nexus adaptor kit

Adaptors are supplied for

SCART	TVs, Video players, Pay TV
3.5mm jack (M)	Portable audio players
3.5mm jack (F)	PC active speakers.
BNC	Cameras
Phono (F)	General AV equipment.

AV Sources

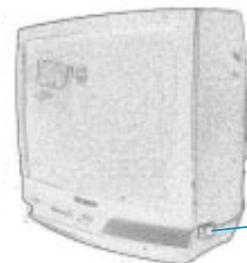
A source is something that generates a signal such as a DVD player, VCR, Camera, CD player or PC video out, TV tuners. The black infra-red transceiver attached to the adaptor cable should be fixed over the remote sensor on your device. It should be orientated so that the side with the screws is closest to the sensor. Your device should still work as normal.



IR Transceiver

AV Outputs

AV output such as televisions, active speakers, and amplifiers receive a signal from the Nexus. This can also include for instance an input on a VCR. For an output, the transceiver should be placed anywhere it is visible, from where you will use the remote e.g. on the side of a TV.



IR Transceiver

Telephones

Connecting the telephone hub (if telephone hub included)

The telephone hub allows you to use any RJ45 socket in the house as an extension for one or two lines. To enable this, you need to connect your telephone lines to the green telephone hub by one of the following methods:

- (a) Using the Tel line In cables shown below.
- (b) Wiring the telephone line to the patch panel and patching this to the hub.

Tel line in adaptor cables.

These Tel Line In cables connect one or two telephone lines to an RJ45 socket. The RJ45 plug may be plugged either directly into the green marked telephone ports on the Nexus or via the CAT5 network (socket to Patch Panel).



Telephone input line A



Telephone input - lines A+ B

Line in

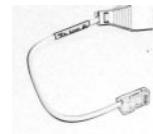
- Make sure you know which telephone number is line A and which is line B.
- **Do not plug two different telephone lines into the same line (lines A and B as designated on connecting cables).**

(b) Pinning for wiring telephone lines to a patch panel

	Tel pin	Patch panel pin
Line A	2	1
	5	4
Line B	2	6
	5	8

Telephone Out adaptor cables

Use these telephone adaptor cables to connect a telephone at any RJ45 socket.



Single Tel Line Output



Double Tel Line Output

Line out

Once you have patched in your telephone hub to the appropriate socket (see next page) your telephone extension will work

Ethernet

The ethernet hub enables you to network computers to share files, printers, peripherals and play networked computer games. See the Netgear installation guide for more details on operating the hub.

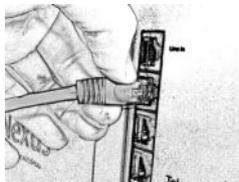
The Data port nearest to the middle of the nexus can also be used for uplinking when the black button is depressed.

Labelling

Once you have plugged your devices into the CAT5 network , label the patch panel using the labelling plate and magnetic labels. It is useful to label your equipment with the white labelling plates and colour coded magnetic labels as you connect everything. (socket No. 9 - TV - blue "TV " tag).

Patching

Patch cables are colour coded for ease of use; **GREEN** for telephones, **YELLOW** for data, **RED** for AV sources and **BLUE** for AV outputs. If you have properly labelled your patch panels with the colour coded magnetic tags you can simply patch from red on patch panel to red on thehub (AV Sources), blue to blue, yellow to yellow etc. Use the colour coded patch leads for easy identification. Warning: Do not cross-patch the Nexus - eg connect a telephone line to a data socket



RJ45 insertion

Orientate correctly and push until it clicks.



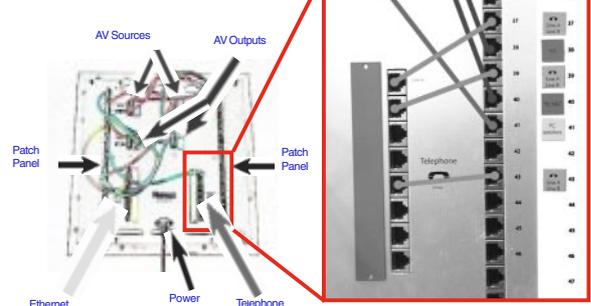
RJ45 removal

Pinch the plug to remove.

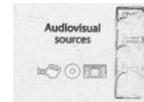
Remote control numbering

The numbers next to the AV sources (red) refer to the number pressed on the remote to view that source. You should put the sources in the order that you want them on the remote, label them with the magnetic labels and note which device refers to which button on the remote eg 1. VCR, 2. CD player, 3. Camera.

Patching

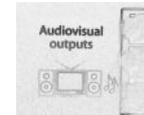


Telephone ports and patch panel patching is colour coded for easier usage.



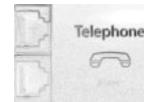
AV Sources - Red

Patch video sources, music players, and cameras



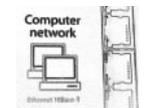
AV Outputs - Blue

Patch Screens, active speakers.



Telephone hub - Green

Patch telephones, fax machines and modems



Ethernet hub - Yellow

Patch computer network cards.

Operation

By now your Nexus should be wired up and ready to go.

1. First connect the power lead to the socket on the front of the Nexus.
2. You may then plug in and turn on your Nexus.
3. The power light on your Ethernet hub should now light up.
4. The main power light will not light up until the Nexus is in use (an output is activated).
5. The Nexus should be turned off when it is being left unused for an extended period of time, i.e. when you are on holiday.
6. Whilst the Nexus remains on, your settings will be kept. To reset these, turn off your Nexus, wait 10 seconds then restart.

Using Your Nexus

Your Nexus will now be ready to distribute your audiovisual signals, as you require, at the touch of a button. To use:

1. Put batteries in remote.
2. Check that you have at least one source playing (camera plugged in / VCR playing).
3. Switch the TVs to AV and amplifiers / hifis to Aux
4. By pushing a channel button on the remote corresponding to an active source you should be able to view/hear it at the desired output.

You will now be able to watch and hear any of your AV sources at any TV and speakers. You can also control the source from wherever you are watching/listening to it; just point the source's remote control at the output and use as normal. You can only control the source you are watching or listening to.

The remote

The basic functions of the remote are listed below.

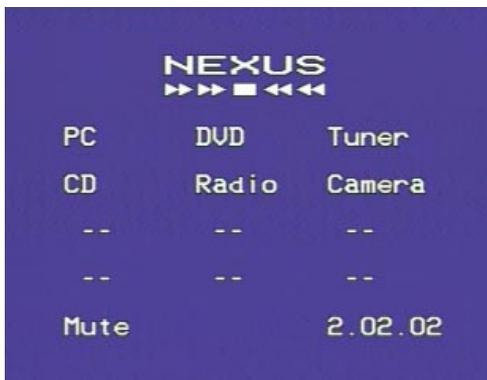
Numbers 1-12	Numbers correspond to the sources you may wish to select. E.g. Button  selects source 1.
Mute	Mutes the sound for the source currently selected. This channel will remain muted at the selected output.
Chan+	Moves the selected channel number up by one.
Chan-	Moves the selected channel number down by one.
Vol+	Increases the volume of the selected channel.
Vol-	Decreases the volume of the selected channel.
Off	Turns off the output. When all outputs are turned off the Nexus goes into sleep mode.
Menu	Displays list of sources
Select	Select s flashing label in menu
Alt + Menu	Setup menu

Menu Setup

The buttons SELECT, ALT and MENU are for control of the setup function.

The set-up function allows you to set up your Nexus so that when a source is selected with the remote, a description of that source will appear in the bottom right hand corner of the screen. This allows the user to easily see what they have selected.

The first screen of the setup function is shown below.



To enter this screen press the menu button on your remote. This screen shows the labels that are currently assigned to each source. The source you have currently selected will appear flashing.

The labels are arranged to match the layout of the remote. In this instance the sources are labelled as follows:

1=PC	2=DVD	3=Tuner
4=CD	5=Radio	6=Camera
7=Unlabelled	8=Unlabelled	9=Unlabelled
10=Unlabelled	11=Unlabelled	12=Unlabelled

Use the channel number buttons to select the channel you wish to label.

Pressing ALT+MENU simultaneously will open the next menu screen and allow you to label the source.

Use the channel buttons again to select what you wish the source to be called and then press SELECT to confirm.

On the third screen, if desired, a number may be added to the name. This may be useful if you have more than one of the same type of source, for example DVD1 and DVD2.

This number is selected in the same way as the previous menu, with channel numbers corresponding to on-screen positions. Press button 1 followed by SELECT if you do not require a number.

Maintenance

Make sure remote batteries are charged.

Inserting remote batteries.

1. The battery covers may be removed by inserting either a small flat-head screwdriver or similar item into the wider of the two slots on the back of the remote, and gently levering up the panel.
2. Two 1.5v AAA batteries (as supplied), should be inserted into the compartment. The required polarity is indicated by a + and - sign for each battery.
3. Replace the battery cover.
4. Do not insert batteries into remotes you do not intend to use (spares).

Troubleshooting

NEXUS does not work at all

If neither the ethernet hub light nor the main power light is on:

Is the Nexus connected to the power supply?

Is it switched on?

If the ethernet hub light is on:

Do you have some **active** devices plugged in as sources?

Are they analogue sources (not digital)?

Is the TV set to AV?

Is the Hifi set to Aux?

If video, is it a composite signal?

Do you have your devices patched into the right ports

(sources into source ports etc.)?

Do the batteries in your remote need replacing?

No sound

Is it muted?

Is it connected correctly?

Does your source have a sound? E.g. a camera probably will not.

No Picture

Is it connected correctly?

Does your source have a picture? E.g. a radio will not.

Bad picture / sound

Is the problem with the source?

Are your CAT5 wires too close to power lines (less than 6 inches for any reasonable distance)?

Is your problem with the output?

Will not change channel

Is it the remote / batteries?

Telephones do not work

Are they connected correctly? E.g. to the correct lines

Are your telephone lines connected?

Set-up Menu does not work

Does your remote control work?

Have you followed the set-up procedure correctly?

Try resetting your nexus (power off for 15 seconds, then on).

Cannot control source

Is the infrared transceiver correctly positioned? Try moving it around. Is it the right way up?

Do you currently have that source selected at the output you are using?

Does remote control of the source work directly / does control of other sources work effectively? If YES, there may be a problem with your source.

Technical specifications

Switching

The Nexus matrix switches stereo audio and composite video. Switching is controlled at the outputs using a remote control. It is a non-blocking switch so each output acts independently such that many users can view the same source or different sources.

Switch size	Audiovisual Inputs	Audiovisual Outputs
	6	6
	6	12
	12	6
	12	12
	12	18

Audio

Signal Type	Line level unbalanced or balanced
Channels	Left + Right (stereo)
Input Impedance	560 ohm
Output Impedance	3 ohm
Total Harmonic Distortion	0.02 % (unbalanced)
Signal to Noise ratio	> 90 dB (unbalanced)
Crosstalk	> 90 dB
Maximum Transmission Distance	> 305 metres (unbalanced)
Using Shielded category 5e cable	

Video

Signal Type	Composite
Input Impedance	75 ohm
Output Impedance	75 ohm
Maximum Transmission Distance	> 305 metres
Using Shielded Category 5e cable	

Infrared Passthrough

Suitable frequencies	36kHz - 40kHz
Passthrough is switched, meaning that infrared is routed to the source that is being viewed.	

Power

240V

Camera power supply

Input Sockets	12 V dc
Power Output	100mA (over-current protected)
Voltage	12V : 3, GND (0 V) : 6
Maximum Current	
Pins used	

Remote Control

Transmission	Infra-red
Channel selection,	1-12 sources
Volume control, mute and power.	

Ethernet Hub

Make	Netgear
Type	10 Base T (10Mbps)
Port	8 (socket 1 can be used for uplink)

Telephone

Lines	Two
Network	PSTN (POTS)
Ports	8
Maximum	REN 4 (Ring Equivalent Number)
Pins used for telephone line	Line A: 1 & 4, Line B: 6 & 8

Cabling standard

Cabling Standard	Category 5, 5e, 6
Cabling Type	Shielded Twisted Pair

Mounting

Dimensions	310 x 483 x 120 mm (W x H x D)
In 19 Inch Rack	Requires 7U (or 4U shelf)
Dimensions with Cabinet	530 x 600 x 240 mm (W x H x D)

Electromagnetic compatibility

The Nexus unit is designed to comply with the requirements of EN61000 on electromagnetic compatibility, as they apply to the product. The unit will not emit interference, nor will it be affected by normal levels of external interference.

The EMC performance of the connecting cables is strongly dependent on the quality of the cables, the installation and the attached peripheral equipment. In certain circumstances, it is possible for the cables to emit low levels of interference or to be susceptible to interference from nearby cables or equipment.

If interference is suspected, check that the cable and connectors are of good quality and specified to Category 5e, and that they are installed in compliance with the relevant wiring codes. Sources of interference can be identified by switching the suspect equipment on and off while observing the effect. Once the cause is identified, it is usually possible to eliminate the interference by moving either the cables or the equipment to increase separation.