

Connecting AV Units – Part 3

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In Part 2, we considered the implications of installing one or more AV units which might have only a single SCART connector, i.e. most DVD players and some Freeview digiboxes. While this proved to be a practical proposition, the resultant arrangements nevertheless were rather inflexible and, in some circumstances, suffered limitations.

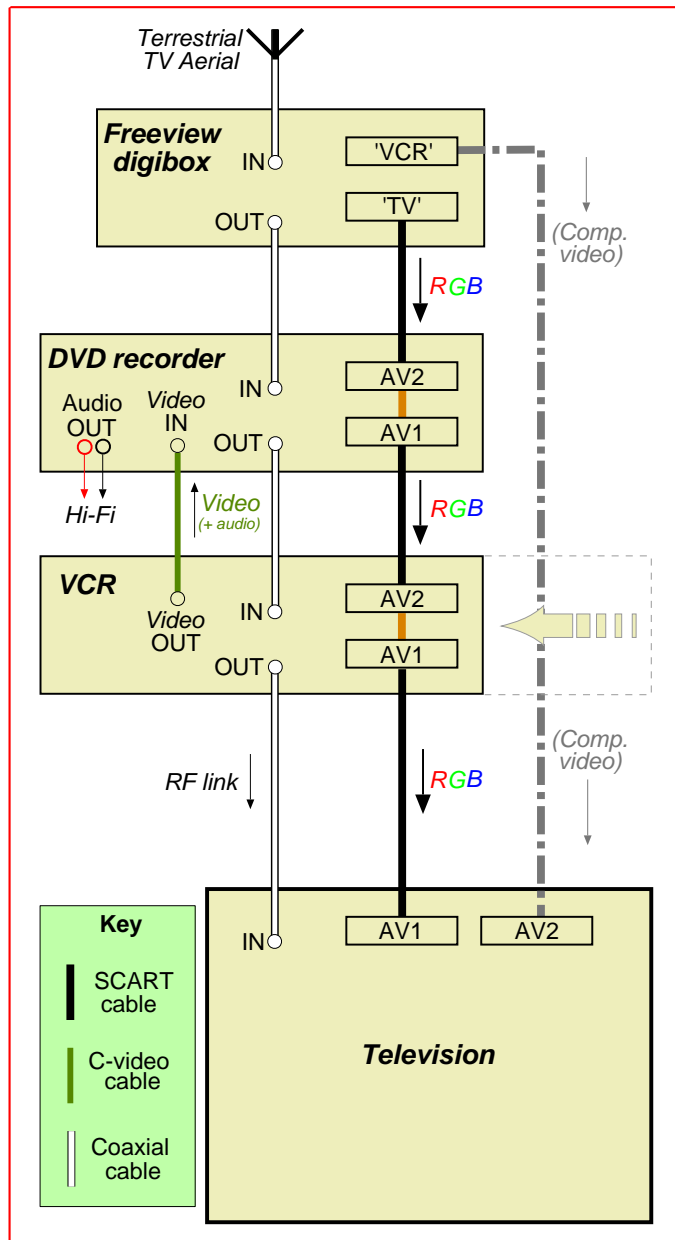
In this part, we replace the DVD player with a DVD recorder and find that, thankfully, everything becomes relatively straightforward. This is primarily because (as far as we can tell from outline specifications and reviews) all the DVD recorders currently available have twin SCART sockets and, furthermore, these benefit from being ‘looped-through’ for passing RGB signals, even if the unit itself is switched off.

(Since previous parts were written, it has been brought to our attention that the phrase “RGB passthrough” or similar appears in newsgroups etc. So for the sake of this discussion, the terms “looped-through”, “passthrough” and “linked-through” are taken as being synonymous.)

The simplified arrangement

While there are many possible detail variations, the twin-SCART socket arrangement on DVD recorders allows us to run a simplified, single ‘daisy-chain’ of units, as illustrated and consisting of:

- **The digibox.** The unit at the head of the daisy-chain can be either a Sky unit or any of the terrestrial digital Freeview boxes as



- previously discussed. Most have twin SCART sockets but, being at one end of the daisy-chain, a box with a single SCART socket can suffice.

– **The DVD recorder.** Unless an odd-ball unit which we don't know about, the DVD recorder will have twin SCART sockets, with 'loop-through' for IN/OUT RGB, composite video and audio lines. Auxiliary audio OUT phono sockets will also be present.

– **The VCR.** Retaining the VCR affords considerable flexibility for dual recording and/or dubbing to or from the DVD recorder. An interesting situation is that all but the very cheapest or oldest VCRs will have twin SCART sockets, with 'loop-through' for passing RGB signals, even if the VCR is switched off. So for reasons which will be discussed later, we have moved the VCR across to take a place in the main daisy-chain, as illustrated.

– **The television.** Again for reasons to be discussed, in this arrangement it is possible for the TV to have only one SCART socket (in previous parts, two sockets were necessary).

– **Satellite dish/aerial.** Depending on the type of digital TV receiver used, either a satellite dish is connected to the Sky digibox as shown in Part 1, p1, or the terrestrial TV aerial is connected to the Freeview box as shown here. In all cases, coaxial link cables feed the RF source downstream to the DVD recorder, the VCR and the TV, as illustrated.

Operating modes

Simply changing from a DVD player to the DVD recorder results in much greater operating potential than previously available, so let us consider each possible mode in turn.

– **Viewing digital TV**

As discussed in previous parts, we can configure the digibox to output RGB signals in order to optimise picture quality, using the procedures set out for Sky units (Part 1, p3), ex-ITV Digital units (Part 2, p2) or the Freeview box being used. It will most likely be necessary to configure the DVD recorder to accept RGB signals via the AV2 SCART socket.

Once configured for RGB, the high-quality signals are routed from the digibox TV output SCART socket, via the looped-through SCART sockets of the DVD recorder (**OFF** or **Standby**), via the looped-through SCART sockets of the VCR (**OFF** or **Standby**), and thence to the TV (AV1).

High-quality stereo audio follows the same route, from the digibox to the TV.

Additionally, the DVD recorder will pick off the L/R audio and link them to the supplementary audio OUT phono sockets which may be connected to a hi-fi unit and speakers, as discussed in Parts 1 and 2. (The DVD recorder *may* need to be left switched to **Standby** for this supplementary audio interlink to be live.)

We shouldn't forget that the various digiboxes are also a source of high-quality audio from the digital *radio* channels, so audio reproduction can also be improved by sending it to the hi-fi, in the same way as TV programme soundtracks.

– **DVD recording**

The DVD recorder may have its own analogue tuner so analogue terrestrial TV channels 1-5 can be recorded directly.

However, the DVD recorder really comes into its own in being able to record the RGB signals from the *digital* TV digibox upstream, simply by selecting the appropriate external input (A2 in this illustration) and selecting **Record**. The programme being recorded can simultaneously be viewed on the TV (VCR **OFF** or **Standby**).

Digital radio programmes from the digibox can also be recorded by the DVD recorder.

– **Viewing DVDs & programmes**

With the DVD recorder set to **Play** and configured to output RGB components, these are sent to the TV via the loop-through SCART sockets of the VCR (switched **OFF** or **Standby**).

Similarly, DVD audio is sent direct to the TV via the SCART leads and to the hi-fi via the supplementary audio OUT phono sockets.

– VCR recording

If desired, the selected digibox programme can be recorded by the VCR onto video tape (in analogue format).

In this case, the VCR cannot use the incoming RGB components but picks up the composite video signal input on pin 20 of the SCART socket, which is quite adequate for VHS standards. Audio will be recorded in stereo.

However, arguably the main reason for retaining the VCR is to allow recording of digital TV programmes by the DVD recorder and, simultaneously, TV analogue programmes 1-5 by the VCR, using its built-in tuner.

This can be ‘off-air’ or the VCR programme monitored on the TV (see ‘The secondary route’ for simultaneous viewing or monitoring of the digibox programme). The analogue TV soundtrack will be recorded in stereo if the VCR is fitted with a NICAM decoder.

– Viewing video tapes

Video tapes can be replayed on the VCR and viewed on TV in the normal way. In this arrangement, there is no supplementary mono/stereo audio output from the VCR to the hi-fi.

– Dubbing DVD to video tape

Non-commercial material recorded by the DVD unit can be dubbed onto video tape simply by setting the DVD to **Play** and the VCR to **Record**. The VCR picks up the composite video and stereo audio signals on the SCART connectors.

The dubbing can be performed off-air or monitored on the TV.

A built-in feature of some DVD recorders is the basic but invaluable non-linear editing facility. So, for example, a full programme containing trailers, adverts, etc can be recorded onto DVD, a ‘playlist’ prepared to pick out just the wanted scenes (leaving out all the unwanted bits), arranged in the desired order, and the resulting, edited programme dubbed onto video tape.

– Dubbing video tape to DVD

Non-commercial material on video tape may be dubbed from the VCR to the DVD recorder but, to enable this, we need to install ‘upstream’ connections for both video and audio, as depicted in the illustration (green line).

This is generally straightforward as VCRs invariably have phono sockets for composite video and stereo audio **OUT**, while (as far as we can tell) all available DVD recorders have rear-panel phono **IN** sockets for the same signals (**AV4**), so direct interconnections can be made.

Apart from setting the VCR to **Play** and the DVD recorder to **Record**, the only other necessary action is to select the appropriate input on the DVD recorder; typically **A4** (the front-panel sockets usually being **AV3**).

Once again, dubbing can take place either off-air or can be monitored on the TV.

The secondary route

There will be occasions where, because the ‘daisy-chain’ is being used for other purposes, it will not be possible to view a digital TV programme while other things are going on, including some of the listed operating modes:

- When the VCR is recording an analogue TV programme 1-5.
- When dubbing from DVD to video tape.
- When dubbing from video tape to DVD.

However, if both the Sky/Freeview digibox and the TV have two SCART sockets apiece, an optional but recommended connection can be made by linking the **VCR** connector on the digibox to **AV2** on the TV, as illustrated (broken grey line).

This *always* allows the digital TV programme to be viewed, by selecting **A2** on the TV, regardless of what is going on elsewhere.

When using this alternative link, video quality is necessarily limited to composite video standards, with stereo audio.

S-VHS video recorders

If an S-VHS video recorder is used in place of a standard VHS unit, unfortunately it *cannot* record the RGB video components from the digibox/DVD player and will default to using the lower-quality composite video signal, even if S-VHS tape is used. Similarly, it *cannot* output RGB components to the TV.

However, it is possible to improve matters significantly by using S-video for both record and replay, but how this is achieved will depend on the particular S-VHS VCR to be installed.

For example, it may be possible to (re-)configure the DVD recorder, via the on-screen menus, to output an S-video signal via the AV1 SCART socket, in which case the VCR will record it onto S-VHS tape.

Similarly, it may be possible to configure the TV AV1 SCART socket to input the S-video output from the VCR (instead of composite video). Or alternatively, if AV2 on the TV can be set up to accept an S-video signal, then the two SCART leads to the TV may simply be transposed.

In either case, the VCR will *also* need to be reconfigured to output an S-video signal via the AV1 SCART socket, often by a physical switch on the VCR.

To say the least, this is not a very elegant solution – and is surely not user-friendly – but it does work! It can certainly be used where an S-VHS recorder is installed, the downside being that, although the highest-quality RGB signals will be output from the Freeview digibox and the DVD recorder, they will unavoidably be degraded slightly by the reduction in quality to S-video via the link from the VCR to the TV.

When things go wrong...

If all has gone well, we have finished up with a hugely capable and flexible AV system but, perhaps inevitably, the relative complexity increases the likelihood of problems arising with the cabling and switching arrangements.

The following discussion is by no means exhaustive but hopefully covers the most likely problem areas and how to deal with them.

– When cabling up pairs of SCART sockets, it is *very* easy to get the IN and OUT plugs transposed, bearing in mind the sockets are labelled typically as TV/VCR or AV1/AV2. The ‘gotcha’ is that the system may initially appear to work (e.g. an RGB ‘loop-through’ will work in either direction) but things can go adrift if, say, a unit tries to output a signal via the IN socket. To minimise mis-connections, we recommend labelling the SCART plugs or cables.

– On the same tack, note that the IN/OUT SCART sockets may not physically be the same way round as shown in the various illustrations; the TV/VCR and/or AV1/AV2 sockets may be transposed.

– As discussed on p5 of the *SCART – What’s it all about?* article, watch out for SCART connectors becoming dislodged, either partially or fully. This often happens when pushing unit(s) back into place on the shelf, when pressure on the SCART leads can easily cause the connectors to become displaced. Typical symptoms are loss of audio channel(s), or colours being wrong (due to loss of one or more RGB components).

– With no less than three AV units connected to the TV, each generating a video image, it is very easy to lose sight of what you are looking at – no pun intended – particularly as the quality of a DVD recording (commercial or DIY) is difficult to distinguish from a digital TV programme. If in doubt, switch off the VCR and ensure the DVD recorder is not replaying a programme; what’s left must be the digital TV programme. In this arrangement, a quicker way would be to select the TV input to A2, as the signal then comes direct from the digibox VCR socket to the TV (AV2), via the secondary route.

– It is very easy to get the L/R audio lines to the external hi-fi inadvertently transposed. As a

result, the speaker(s) of the TV and those attached to the hi-fi will be acting out of phase with each other. Some people can instantly hear when this has happened but the majority of us may notice only that the *combined* sound may seem a little 'flat'. If in doubt, try transposing the L/R audio leads connected to the audio **OUT** phono connectors on the DVD recorder and see if the sound improves. Alternatively, check that left<-->right image movement on screen is reflected by 'movement' of the stereo audio *on the hi-fi speakers*, in the correct sense.

– When preparing to dub from video tape to DVD, it is possible to inadvertently set up a positive feedback return loop, resulting in the picture throwing a wobbly – and a *very* loud raspberry on the speakers! In the illustration, with no other action, this can occur when the DVD recorder **IN** is selected to **A4** to input the signal from the VCR. The video/audio from the VCR will be routed to the DVD recorder – then out again via the **AV1 SCART** socket – and looped back to the VCR via the **AV2** socket. To avoid completing this return loop, ensure that the VCR **IN** is set to something other than **A2**, *prior* to selecting **A4** on the DVD recorder.

The end bit

We hope this and the preceding articles will assist if you are faced with the problem of interconnecting a series of AV units and optimising video and audio quality. Don't assume the digibox installation engineer will have done it for you! (See LwT 1.5 pp38-39).

Inevitably some units will not follow the general trend and maybe have odd-ball connections but, with perhaps only minor modifications, and a spot of trial and error, the general principles can still be put to work.

The next article on the AVLine CD, *AV Units and All That*, will pick up on some reader feedback from when Parts 1-3 were originally published (2003), plus a few related matters.

If anyone is running a system which differs either fundamentally or in detail from those we have discussed, or if you're having problems getting your system to work in the expected manner, we'd be happy to receive details and advise if we can.

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