

Set up a satellite dish to receive **free HD TV**

You don't need to sign up for expensive subscriptions to get high-definition TV – with the right kit, you can see what the fuss is about for free without any contracts

If you've bought an HD-ready TV set and want something to watch on it, you might think that free sources of HD content aren't available – but you'd be wrong. The BBC's High-Definition trial service on satellite can be picked up with more than just a Sky box.

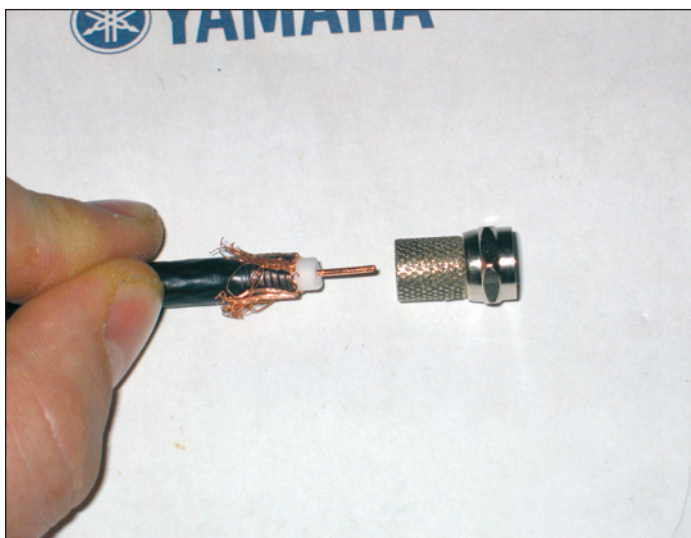
If you're confident with a bit of DIY, you can buy a receiver and dish, install them yourself, and watch the BBC's HD programmes – plus lots of other SD satellite

broadcasts – without paying a subscription to anyone.

A subscription-free satellite setup will also give you hundreds of extra channels, such as Al Jazeera English, CNN, France 24, Men and Motors, Bloomberg, and even some free movie channels; we'll have a look in a future issue at exactly what's on offer. But first, let's see how you can get HD, subscription-free. The satellite equipment we used was supplied by Turbosat (www.turbosat.com).

STEP 1

For this workshop we're using a Humax HDCI-2000 satellite receiver, which costs around £220; to get an HD picture, you have to connect it to your TV set via either the **component** connectors – the vertical row of connectors immediately to the left of the **HDMI** port – or via HDMI. There's also an **optical** audio connector, which you can use to link the box to your **surround sound** system; BBC HD transmits full **Dolby Digital** surround sound. If you're using a different box you need to make sure that it has the HDTV logo on the front, which guarantees compatibility with satellite HD transmissions.

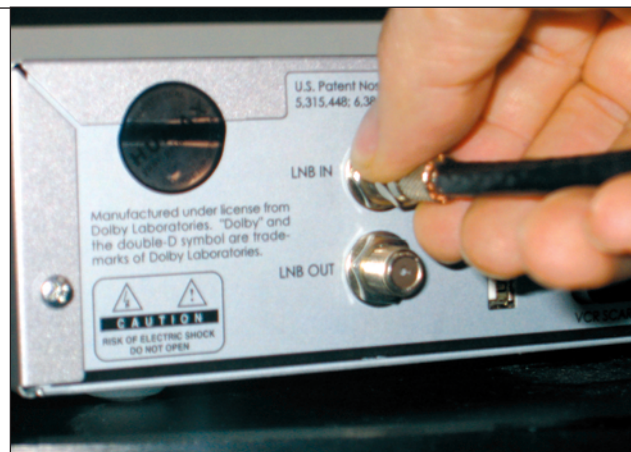


STEP 2

You'll need to run a co-axial cable from the satellite receiver to your dish – unless you already have a Sky minidish that you can use. You need satellite-grade cable, and the plugs on each end are called F connectors. Strip the outer insulation back about 1.5cm, and strip about 1cm off the inner white insulation. Fold the copper braid back over the outer insulation, and then fix the connector by simply pushing it over the end of the cable and screwing it on, so that it grips properly. For now, just put a connector on the end nearest the receiver – you'll need to get the other end outside before you can put the plug on.

STEP 3

Make sure the satellite receiver is turned off before you connect the cable. Push the connector onto the **LNB** in socket, and then rotate the end of it clockwise to lock it in place. If you have another receiver – a Sky box, say – you can make a cable to run from the LNB out socket on this receiver into the input of the other one; you'll only be able to use one receiver at a time, but you can share the dish between them. If you already have a dish pointing at the satellite used by Sky – called Astra 2, at 28.2° East, then you can skip to step 12.



STEP 4

Now, follow the instructions to assemble your satellite dish; you'll need to fit the LNB – that's the bit that actually receives the signal – to the arm. Normally the connectors will face directly downwards. We've chosen an 80cm dish, and a universal LNB, which will enable us to set up the system to receive other satellites as well. If you're in the South of England, a 60cm dish will be okay for the Astra 2 satellite; for extra satellites, or if you're further North, a bigger dish may be needed. Local satellite stores can give you advice.

STEP 5

Now you need to mount the fixing bracket on your wall; 28.2 degrees East means the satellite is that far East of Due South, so you need to find a wall that will allow you to fix the dish, and move it sufficiently from side to side. Our chosen bracket keeps the dish quite close to the wall; choose one that puts the dish further out if you need more space to rotate it, or opt for a garden stand. Make sure the bracket is lined up vertically using a spirit level; otherwise it will be hard to find the satellite. If you're fixing the bracket to a pebbledashed wall, as in our picture, you *must* make sure screws are watertight. If you can't guarantee this, it may be best to choose an alternative location. It's also worth noting that, despite popular belief, satellite dishes don't have to be placed high up.



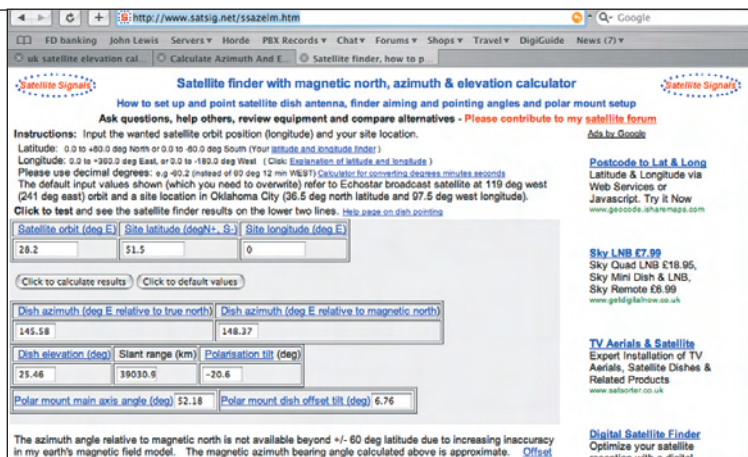
STEP 6

After fixing the mounting bracket to the wall, or whatever else you're using, adjust the pole to ensure that it's vertical – check with a spirit level on at least two sides. When you have the pole straight, make sure any bolts and screws are done up tightly – you don't want the dish to move in high winds. Now you need to find out roughly what latitude and longitude you are at. The quickest way is to go to www.streetmap.co.uk, and type in your postcode. Click Search, then right at the bottom of the page, click the link to 'Convert/measure coordinates'.

Workshops Step-by-step guides

STEP 7

Make a note of your latitude and longitude; for our example, it's 51.5 North and 0 East. At www.satsig.net/ssazelm.htm there's a calculator that will tell you where to point your dish. Enter 28.2 in the 'Satellite orbit' box, and your latitude and longitude in the next two, then click the button to calculate the results. The important information is the 'Dish azimuth relative to magnetic North' which tells you how far to rotate the dish left and right, and the 'Dish elevation' which is how far up in the air you need to point the dish.



STEP 8

Mount the dish on the pole and tighten the bolts enough so that it doesn't move on its own, but so you can still move it from side to side with a little pressure. Now you need to set the elevation; the dish is designed so you can read the value from a scale when it's mounted vertically – on our dish, in fact, the scale is marked in latitude, rather than elevation, so we set it to around 51; other dishes have the elevation marked on the scale. We'll do the fine adjustments later.

STEP 9

Now you need a compass, like the ones sold by outdoor stores – this one cost around £7. Rotate the numbered dial so that the azimuth value you found in step 7 is by the black marker (highlighted here with a red circle). Then – making sure you're not near large metal objects that could affect the reading – rotate the compass so that the arrow pointing north is between the two luminous dots. When it is, the mark on the dial, and the luminous line at the end of the compass (highlighted with a yellow circle) will show the direction in which you have to point your dish. Holding the compass below the arm of the dish may help you line it up.

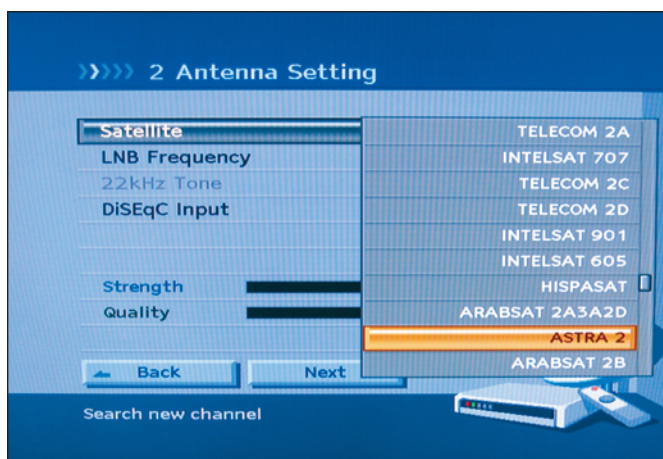


STEP 10

The dish is aligned roughly, so now we can connect it to the receiver. You'll need to drill through a wall or window frame to route the cable outside to the dish. When you're drilling through the wall of a house, always remember to do it at an angle, so that the outside is lower than the inside; this stops water running into the hole. Feed the cable through the hole from the inside. Cut off a short piece – around 2m long – and fit a connector to each end of it, and then fit a connector to the piece that leads back to the receiver.

STEP 11

This is a satellite finder, and it costs about £25; it makes a high-pitched whistle when it's receiving a signal from the LNB. Connect the receiver to the labelled socket, and use the short cable you made to link from the LNB to the other one. Turn on the receiver, and then adjust the knob on the satellite finder so the dial reads about 5. Now, slowly move the dish until you find the strongest signal.



STEP 12

You now need to work through your chosen receiver's setup screens. On the Antenna setting screen, move to Satellite, and select Astra 2, then press OK. Make sure the LNB type is set to Universal, and the other options are disabled. Tell the box you don't want to add any more satellites, and an automatic scan for channels will begin. This can take around 20 minutes. Some suppliers may be able to send you a receiver with channels already stored, which will save you time, and means you'll see a picture when you have your dish aligned, as well as hearing the loud tone from the satellite finder.

STEP 13

If no channels are found, the dish is not aligned correctly, so go back to Step 8 and check everything. Positioning is crucial – budget satellite finders like the one we used will find any satellite, not just Astra 2, so if you're a long way off, you could be pointing at a different one. You can start another scan from the receiver's menu, after repositioning the dish. If all is well, you'll see a long list of channels – several hundred – and you can press OK to save them. The channel numbers will depend on the order that your receiver found them; press Menu and you can sort them alphabetically.



STEP 14

Browse through the channel list and you'll see lots of things – but remember that many of them are Sky channels, and you can't see those without a Sky box. But, you should find BBC HD listed, which broadcasts previews around the clock, and a few hours of HD programming each evening. Congratulations – you're up and running. In the next issue, we'll show how you can receive more programmes for free, by adding a second LNB to your dish.

