Western Digital WD1005-WAH

Default Jumper Stettings

```
 ┌─LED──────────────────────DRIVE 1────DRIVE 0────WINCHESTER──────────┐
 │  ....                     :::::::::: :::::::::: :::::::::::::::::::  │
 │   J1                      1    J2    1    J3    1       J4          │
 │                                                                1.  │
 │        ..                                                      ▐    │
 │        W1                                                      W3   │
 │                                                                     │
 │                                                                     │
 │                                                                     │
 │      ..                                                             │
 │      W2                                                             │
 └───────────────────────┐  ┌──────┐  ┌──────────────────────────┐────┘
                          │||||||||||  |||||||||||||||||||||||||||
```

Jumper closed: ▐

Jumper Options

W1   OPEN   Factory default

W2 Translation mode

W2   OPEN   Enables 17-sectors-per-track translation mode (default)

            CLOSED   Disables translation mode

W3 Controller address

W3 2-3   CLOSED   Selects port address 1F0-1F7 for the first hard disk controller
                      (default)

    1-2   CLOSED   Selects port address 170-177 for the second hard disk controller

Board Connectors

J1   4-pin connector external LED

J2   20-pin data cable connector drive 1

J3   20-pin data cable connector drive 0

J4   34-pin control cable connector hard drive

Setup

The WD1005-WAH supports two ESDI hard disks. The disks have to be jumpered for 34 sectors per track hard sector mode only.

As one of the first ESDI controller cards it is compatible to the early IBM BIOS drive types, which all use a 17 sector per track addressing scheme. Since the WD1005 can address 34 sectors per track, a translation mode is necessary to avoid the waste of valuable storage space. The 17-sectors-per-track translation mode lowers the cylinder count under 1024 (which is the highest cylinder count DOS can address) and increases the head count up to 16 heads max. Now the user can choose a drive type from the system bios, which reflects the storage capacity of the ESDI drive but not the physical drive geometry. The amount of eventually lost storage space depends on the drive types delivered by the system BIOS. The upper storage space limit of the 17-sectors-per-track translation mode is 142 MB (1024cyl x 16hd x 17spt x 512byte).

Like the standard ST506 controller cards, whether MFM or RLL, the WD1005-WAH has no on-board BIOS. Instead of using the system BIOS drive type "1", which the later ESDI controller cards prefer, the user has to choose a 17 sector per track drive type which is equal or less to the drive's storage capacity.

The low-level format has to be done with Western Digital's wdfmt.exe utility. Wdfmt doesn't detect the physical drive geometry or the cylinder skew factor automatically. The user has to know the correct values instead.

The WD1005-WAH has no track caching option and supports an interleave of 2 max. This means that it takes 2 revolutions of the disk's storage platter before an entire track (about 17,5 KB) of data is read by the controller card. An interleave of 1 degrades the controller performance massively.

The WD1005-WAH is suitable for a 286 or slow 386 PC and for hard disks with less than 150MB storage space.

<u>Usenet</u>

"First, no BIOS drive-type table I've ever seen, nor any that my motherboard vendors and manufacturers have ever seen or heard of, has even one single entry in it for a 34-sector device. Perhaps Compaq's machines are the exception, but in general, 17-sector entries are the only thing you'll get in your average 386 BIOS.

The WD-1005-WAH has a way to help get around this, however. If you do not put a jumper on W2 (i.e., the way they ship it from the factory), the controller fools the rest of the system into believing that the drive has half as many sectors as it really does (17 instead of 34), but twice as many heads as it really does (in the case of the CDC Wren III-182-ESDI, that's 18 heads instead of 9 heads). As with 34-sector drive-type entries, however, you will Almost Never See Or Hear Of 18-head BIOS support. There just aren't any drives with 18 heads, and there probably never will be. I solved this by using a 15-head drive-type, which only wastes 25 megabytes of the 150 the drive formats down to ordinarily.

[…]

Note also that WD Tech Support told me specifically on the phone that the controller was only useful at 3:1 interleave."

Paul Vixie in comp.unix.xenix, 01-28-1988