

Floppy Disk Drive Pinout

FDD

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Floppy Disk Drive Description

The floppy drive is considered a legacy product at this point, still in production but not recommended for new designs. Even the smallest [USB Thumb Drive](#) on the market has more memory and cost less than a floppy drive. In addition the semiconductor memory within the USB drive will not have the shock and vibration issues that the mechanical floppy drive has.

The transfer speeds are relatively slow, and the data storage capacity vary low. Data transfer speeds for Floppy Disk Drives [FDD] normally are 250KBps for the 720KB disk size and 500KBps for the 1.44MB disk size. However 1.25MBps may also be found on some drives. FDD spin at a nominal rate of 300 RPM.

Common power dissipation over the 5 volt line will be in the range of 1.25 watts. Bit Density for the two common size Floppy Disks are 8717 bpi [Bits per Inch] for the 720KB size and 17434 bpi for the 1.44MB size. Two common size devices are produced for the 3.5 inch floppy drive; the standard version 25.4 x 101.6 x 146mm [H x W x D], and a reduced size version 12.7 x 96 x 126mm [H x W x D].

There are still a number of companies that [Manufacturer Floppy Disk Drives](#).

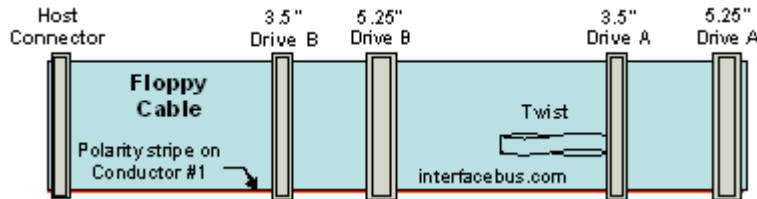
The internal case drives use the pinout described on this page, while external drives normally use a USB interface.

Floppy Disk Drive Cable

The table below provides the Personal Computer Drive A Pinout for either the 3 1/2 or 5 1/4 floppy drive. The cable uses a 34-pin IDC connector [requiring a 34-pin device header], and a 34-pin flat ribbon cable [\[IDC Definition\]](#). The connector size differ between the two drive types, with the 5.25" drives requiring a larger connector. The 3.5" floppy drive format is the size in common use, and the common cable in general use will not have the 5.25" drive connectors. A common cable name which accepts both the 3.5" and 5.25" drives may be termed a universal cable. The pin out differences for the B drive is shown after the table. The twist in the cable causes the pin out difference, and is used to indicate which drive is the 'A' drive.

External floppy drives using [USB](#) as the interface could be any size and would not use the pinout table below.

Floppy Parallel Cable, Physical Length



The cable connectors are female, and require male 34-pin headers on the floppy drives and [Motherboard](#).

The odd pins are on the keyed side [red cable strip] of the connector, while the other side of the connector contain the even pins.

The cable length should be between 19 inches and 24 inches, while some may be as long as 32 inches [19" is standard].

Connector topics; [Shrouded Header Definition](#), and an [Un-Shrouded Header Definition](#), and a list of [Header Connector Manufacturers](#).

The header consists of two rows of 17 pins. The header pins are male while the cable side of the connector has female pins. The pin-to-pin spacing is 0.1 inch, which is also a standard for many other applications.

Note some manufacturers may color code their headers to assist in troubleshooting, color-coding is not referenced in the standard.

Ribbon cable topics; note the military and much of the government uses the term flat cable and not ribbon cable to describe the style.

The ribbon cable uses stranded [28 gauge](#) wire, with a nominal impedance of between 70 to 90 ohms. [Ribbon Cable Diagram](#) showing wire placement.

A list of [Companies making Ribbon Cable](#), with links to other standards using flat cable.

Some newer style IDE cables may appear to be round, but it's the same flat cable in a circular jacket.

Floppy Disk Drive Pinout

Floppy Drive A Pin Out

Pin No.	Signal name	Description
1	Ground	--
2	/REDWC	Density Select 1=Low/0=High
3	Ground	--
4	N/C	Reserved
5	Ground	--
6	N/C	Reserved
7	Ground	--
8	/Index	0=Index
9	Ground	--
10	/MOTEA	0=Motor Enable Drive 0
11	Ground	--
12	/DRVSB	Drive Select 1
13	Ground	--
14	/DRVSB	Drive Select 0
15	Ground	--
16	/MOTEB	0=Motor Enable Drive 1

17	Ground	--
18	/DIR	0=Direction Select
19	Ground	--
20	/Step	0=Head Step
21	Ground	--
22	/WDATE	Write Data
23	Ground	--
24	/WGATE	Floppy Write Enable, 0=Write Gate
25	Ground	--
26	/TRK00	0=Track 00
27	Ground	--
28	/WPT	0=Write Protect
29	Ground	--
30	/RDATA	Read Data
31	Ground	--
32	/SIDE1	0=Head Select
33	Ground	--
34	/DSKCHG	1=Disk Change/0=Ready

Floppy Disk Drive Cable Twist

The Floppy cable twist is used to determine which drive [in a multi-drive] system is drive 'A' or 'B' [also called drive '1' or '2']. From the pin out table below; the swapped pins determine the floppy drive enabled, and which motor is enabled. The pins are line 10, line 12, line 14, and line 16, while the other lines in the twist are ground lines. In general, the Floppy drive ships with a jumper positioned so that the drive is a 'B' drive, the cable does the rest. There may be other variations [dual twist] in the cable, this page explores one "common" implementation.

Floppy Drive A/B Twist Pinout

--	Controller	Drive A	Drive B	Description
Wire 1-9	1-9	1-9	1-9	No Change
Wire 10	10	16	10	Motor Enable Drive 0/1
Wire 11	11	15	11	Ground, No Change
Wire 12	12	14	12	Drive Select 0/1
Wire 13	13	13	13	Ground, No Change
Wire 14	14	12	14	Drive Select 0/1
Wire 15	15	11	15	Ground, No Change
Wire 16	16	10	16	Motor Enable Drive 0/1
Wire 17-34	17-34	17-34	17-34	No Change

Floppy Disk Drive Legacy

With the introduction of inexpensive [USB](#) Flash drives, many new [Personal Computers](#) have been shipping without a floppy drive. PCs are now able to boot from a CD or other devices. As of the end of 2010 there are still several manufacturers producing FDD in the 3.5" format. Floppy Drives in the 5.25 format have not shipped with computers as long as I can remember. Floppy drives are almost obsolete [replaced by USB flash drives] and should not be used in new designs. However, the last computer that shipped with a floppy drive which I purchased was in 2005, I assume because some software drivers were only available on floppy disk.

In anycase the floppy interface used 5v [TTL](#) as the electrical interface, which would also comply with [LVTTTL](#) switching levels.

An Input high voltage of 2.0 volts and and input low voltage of 0.8 volts.

An Output high voltage of 2.4 volts and and input low voltage of 0.5 volts.

The out-going driver could be a 74LS38 [Open Collector Driver](#) [NAND Buffer].

While the receiver could be a 74LS14 Hex Inverter with [Totem-pole Outputs](#).

Note that the 1k [Pull-up Resistor](#) would be on the input of Schmitt Trigger [pulled to 5 volts of course].

IDC: [Insulation Displacement Connector](#). A listing of connector manufacturers may be found on the [connector manufacturers](#) page. New 'high-end' cables may be rounded cables as opposed to flat cables, but the pinouts and connectors remain the same. The newer rounded cables are really just a flat cable that has been formed into a circle. Additional computer bus descriptions and pin out tables may be found by selecting the Buses icon below. Many of the pages also include links to manufacturers which produce the interface IC's, cables, and connectors.

The pin out for a power connector for the floppy drive is listed on' [ATX Floppy Drive pinout](#), or [Motherboard ATX pinout](#) page.

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Related PC Interfaces > [Hard Drive IDE Interface](#)

Editorial view

At this point in time it should be obvious that no standard organization will be up-dating the floppy disk interface specification.

Every floppy drive I've seen for a while didn't even use the floppy drive pinout, because it was replaced by the USB cable.

In any event consider the floppy drive interface closed, with no upgrades planned to the interface.

Yes legacy systems may still be using floppy disks, but most will be with an external USB floppy drive.

The upgrade path would be to replace the entire computer, which would include the floppy drive with the older interface.

Some form of converter will be required if you decide not to upgrade an external floppy drive, but still use a USB interface.

There are a number of styles, one particular type plugs into the IDE connector on the floppy drive and has a

USB connector on the opposite side of the board.

Normally a connector-to-connector interface with no cable is called an adapter.

For reference the search history or trend for the term floppy drive has been declining year after year.

The graphs show continued interest in the floppy drive cable, or declining interest depending on your point of view.

But it's clear that there is still interest in the floppy interface.

Topic Navigation: [Engineering Home](#) > [Interface Buses](#) > [Personal Computer Buses](#) > IDE Hard Drive Interface.



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