

Development and Demonstration of Waste Electrical & Electronic Equipment (WEEE) Prevention and Reuse Paradigms

Action B.6- Promoting and Supporting WEEE Prevention Culture in Greece

Deliverable B6.2- Quick Repair Guide for Electronic Appliances

-Part 1-

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5. External-External hard drive

5.1. General-Operation Principles

A hard disk drive (HDD), hard drive, hard disk, or fixed disk is an electro-mechanical data storage device that stores and retrieves digital data using magnetic storage. Hard drives are used in a variety of electronic devices, such as computers, digital video cameras, portable MP3 players, video players, satellite TV receivers etc. The storage capacity of a hard drive ranges between 500 GB and 6TB and it is used to store computer data, mostly programs and digital archives, that require saving, in contrast with the RAM memory that is automatically cleared when the user/owner switches off the power supply. However, all types of hard drives contain a cache memory (cache RAM) for temporary storage with a capacity that ranges between 8MB (obsolete) and 128MB.

The external hard drive is a type of hard drive that is connected to a desktop or laptop via a USB port.

In particular, there are two common types of portable/external hard drives. The first type concerns 3.5" hard drives that require direct power to operate. The second type concerns 2.5" hard drives that operate using the computer's power through the USB port. Nowadays, the second type is commonly used.

The 2.5" hard drives, which are similar to the internal computer hard drive, have the advantage of small size and portability, but as a disadvantage, they operate at 5.200RPM and as a result they transfer data with a lower speed.

The most common type of an external hard drive is presented in the picture below. The hard drive is contained in an aluminum protective case which integrates electronic control circuits on one side, controlling the reading and transfer/storing data mechanisms, along with the rotating speed of the hard drive.



Figure 1 The interior of an external hard drive

5.2. Indications of Malfunction-Possible Damages

The most common malfunction indication and the most usual possible damages of an external hard drive, that may be home-repaired, are cited in the table below:

Table 5 Malfunction Indications & Possible Damages of an external hard drive

Malfunction		Possible Damage	
No	Indication	No	Possible Cause
1	Irresponsiveness	1	Malfunction of the Type A USB 3.1. port of the USB cable terminal
		2	Malfunction of the Type C USB 3.1. port of the USB cable terminal
		3	Malfunction of the computer's Type A USB 3.1 port

5.3. Repair Steps

Repair instructions are presented below, for all the possible damages listed in Table 5. The instructions are broken down in steps and are accompanied with pictures so as to provide an overview of the entire repair process.

5.3.1 Repairing Irresponsiveness (USB wiring malfunction)

In order to repair damage No 1, the required equipment includes:

- Spare cable with USB 3.1. Type A and USB 3.1. Type C terminals
- A new cable with USB 3.1. Type A and USB 3.1. Type C terminals.

Malfunction: Hard drive irresponsiveness, possibly caused by a malfunction of the Type A USB 3.1. port of the USB cable terminal.

Step 1: Disconnect the hard drive's USB cable.



Step 2: Connect the external hard drive with the computer by using the spare USB 3.1. Type A type and a USB 3.1. Type C cable.

Step 3: If the problem is fixed replace the old cable with a USB 3.1. Type A type and a USB 3.1. Type C cable.

Step 4: Dispose of the damaged component(s) at the WEEE Sorting Center (SC), or at a collection point of the APPLIANCES RECYCLING S.A., for repair and reuse.



5.3.2 Repairing Irresponsiveness (USB wiring malfunction)

To repair damage No 2, the required equipment and repair steps are the same as the ones presented in the previous section (5.3.1).

5.3.3 Repairing Irresponsiveness (USB wiring malfunction)

In order to diagnose damage No 3, irresponsiveness caused by a faulty computer Type A USB port follow the steps below:

Step 1: Disconnect the external hard drive's cable from the Type A USB 3.1. port of the computer.



Step 2: Connect the cable of the external hard drive to another Type A USB 3.1. port.



If the responsiveness of the hard drive is not improved, the issue lies with the device itself and a specialized certified technician must be addressed.