

Build a Better Mouse...

Improve your laptop PC mouse with this simple modification.

By Rob L. Dey, KA2BEO

2/16/2004

Disappointed by the operation of an optical “wireless” mouse on my laptop computer, I decided to buy an optical “corded” mouse, and realized that improvements were still necessary.

Both types of mice incorporate a wheel and two buttons, and both are small for travel. However, the “wireless” system ties up the single USB port, which is a valuable commodity on my notebook PC. It also blocks the CD player loading tray, which prohibits the use of CDs. The “wireless” mouse requires a special device driver to be installed (for all operating systems), requires a battery, requires a power switch to be toggled during each session, requires a sequence-sensitive link procedure, and causes redundant scroll-bar jumping while trying to scroll.



For portable operation, the “corded” mouse exhibits several problems as well. It sports a USB connector, which (again) ties up a critical port. The USB plug requires a bulky adapter for PS/2 serial port operation, and the large adapter physically blocks the USB port on my laptop. Also, the four-foot cable length is excessive and awkward to use during mobile operation.

In order to correct all the issues mentioned above, the following modifications were made to an IBM Optical Travel Mouse, Model MO32UO (Micro Innovations P/N: 24P0481). However, many different makes and models can be improved with similar changes. Detailed reference material is provided below to assist anyone interested in performing the modifications. The new 6-pin mini-DIN plug can be obtained from nearly any electronic components distributor, including Mouser (#171-2606) and Digi-Key (#CP-2060-ND).

Procedure

Simply cut the cable (leaving an 18” long tail on the mouse), strip and tin the wires, and solder the wires to the appropriate Mini-DIN connector pins (shown in the *Cable Connections* table below).

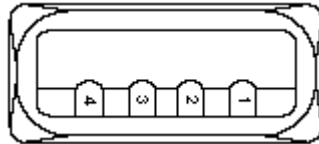
Modification summary:

- Shorten mouse cable from 48” to 18” long
- Terminate mouse cable with PS/2 plug

Advantages included:

- Device driver no longer needed
- Avoids cable clutter
- Frees up USB port for flash drives, lights, or other devices
- Standard PS/2 connector doesn’t block other nearby ports or accessories
- No batteries required
- Removes annoying power switch
- Eliminates “wireless” mouse data link issues
- Allows smooth scrolling

Original USB Series “A” Plug



NOTE: The USB icon is located on top of the connector. The view is facing towards the end of the (male) connector, the side that mates to its receptacle.

New 6-Conductor Mini-DIN Plug



NOTE: Pins 2 and 6 are not connected. The view is facing towards the end of the (male) connector, the side that mates to its receptacle.

Cable Connections

Wire Color	6-Conductor Mini-DIN Plug	Signal	USB Series “A” Plug	Signal
Red	4	+5V	1	VBUS
White	1	DATA	2	D-
Green	5	CLK	3	D+
Black	3	GND	4	GND
Shield	Shell	-	Shell	-