

There exists a wide variety of output protocol for keyboards and pointing devices.

For keyboards :

- AT or PS/2 : a documented standard exists for keyboards, however some things are not fixed and left open.
- USB : a good documented standard exists, everything is defined.

For pointing devices :

- RS232 : older protocol (end of life, a documented standard exists, however some things are not fixed and left open).
- PS/2 : a documented standard exists, however some things are not fixed and left open.
- USB : a good documented standard exists, everything is defined.

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## PS/2 compatibility

For PS/2 devices, two types of compatibility problems can occur.

### 1) Hardware incompatibility

The PS/2 standard is not clear on what values to be used for output line, every hardware manufacturer (mainboards, pointing devices ..) is free to choose the values between certain values and sometimes even works outside the outerlimits. So a certain combination of hardware (mainboard and pointing device) can cause a compatibility problem.

The use of longer cables is not allowed in PS/2, because the system can become unstable. The PS/2 standard indicates only use of cables no longer than 2,7 meters (9 foot). However if you still want to use longer cable or use cable extenders ... , please do a good compatibility test before installing the system in large quantities.

### 2) Software incompatibility

Many different mouse drivers exist and can be forced to run on a system. Not all drivers are compatible with all pointing devices. Many pointing devices are compatible with operating systems existing at the moment when they were developed. However a pointing device is not forward compatible with operating systems that still need to be developed or don't exist yet. So if a new operating system or a new service pack is installed, there is no guarantee that the newer operating system works with the pointing device.

So we encourage to do compatibility tests on each type of system used, before starting to integrate a pointing device in large quantities.

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## RS232 compatibility

Due to limitations with existing RS232 ports occasions may arise where certain ports do not supply enough current to drive the trackball.

We have foreseen following solution on the NSI pointing devices with serial connection (TBL50F1SER, TBL50S1SER, TBM34N1SER, TBM34S1SER, TBS50F2SER):

In addition to the output cable with DB-9 connector, there is also a second cable (1,6meter) with USB connector. This second cable is to give the customer an easy solution for an extra 5V connection to the trackball in those cases where the RS232 port current capability is insufficient.

There are two ways to use this extra cable:

- 1) Plug the USB plug in a USB port of the PC.
- 2) In case no USB port is available, please cut off the USB plug and connect an external 5V supply between the red (+5V) and black(GND) wire.

For the trackballmodules (GK38-xAxx, GK50-xAxx, P38-xAxx or P50-xAxx) we propose following solution in case an external power should be necessary due to insufficient current capability of the RS232 port.

Please connect an extra 5V between pin 6 (+5V) and pin 10 (GND) of connector 1 (see also "pin connections of trackballs")

**In order to be able to offer a solution in case of compatibility problems which cannot be solved by the user, we have created a "repair question form" which can be filled in by the customer. This form can be found on our website under the support section.**



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