

Upgrade/Replacement Keyboard with Tactile Switches for the TS1000 and ZX81

Model ZX8-KDLX imported from Ginger Electronic, Germany
Instructions written by Stewart Newfeld, Zebra Systems

Installation Instructions

Installation will require:

- A small Philips screw driver
- A small knife (be careful) to pry up a corner of the original membrane keyboard from the computer case
- some double-sided sticky tape or glue to attach the new keyboard, and re-cement the 4 rubber case feet

CAUTION: This keyboard is shipped with a very short length of insulation remaining at the end of the two flexible cables. It is best not to remove that insulation until after you have passed the cable through the slot in the top half of your TS1000 case and are ready to insert the cable into the connectors. This will make it less likely that you will bend the tinned stripped wire and have to straighten them.

NOTE: These instructions are for the simplest scenario, where you remove the original keyboard and the only flexible cables passing through the slot in the top half of the computer case are from the replacement keyboard. The manufacturer of this keyboard, Ginger Electronic, has instructions for optionally installing this keyboard on top of an original keyboard without removing the original keyboard so that, should you ever want to, you can restore your computer to its original condition by removing the tactile keyboard. I find that getting two sets of flexible cables fed through the thin case slot, and properly positioned is more difficult than removing the original keyboard.

To begin, clear a area on a table for you to do your work. Have a container, such as the cap of a jar, ready to hold the TS1000 rubber feet and screws. Lie the TS1000

upside down on a clean surface. Remove the 4 rubber feet and put them in the container.

NOTE: The time you are most likely to lose these rubber feet is not now. It is sometime after you replace them that they fall off because the original glue is no longer sufficient to hold them in place. It is a good idea to use some rubber cement or double-sided sticky tape later, when you reattach these feet, so they don't accidentally come off at a future time.

Using a small Phillips-head screwdriver, remove the 2 short silver screws at the bottom, and the 4 black screws at the top of the case back, and put them in your container.

Remove the back of the case and set it aside.

Remove the two small silver screws from the computer board and put them in your screw container.

Now gently lift the computer from the top of the case a couple of inches and notice carefully how the existing keyboard's 2 flexible cables fold and attach to the computer board. The replacement keyboard's flexible cable will be positioned similarly.

Also take note of the plastic standoffs on the top case half that support the computer board. These standoffs are a bit fragile. Later, when you are reattaching the computer board, you do not want to over-tighten the screws that go into these standoffs or you will break them. You can also appreciate that these standoffs can interfere with flipping the keyboard over in relation to the top half of the case.

You are less likely to tear the 5-conductor and 8-conductor TS1000 original membrane keyboard flexible cables if you take the time to figure out how you can grip them one at a time. Grip a single cable with two fingers, as close to where it inserts into its corresponding connector on the computer board, and gently pull the cable out of the connector. After you have disconnected both cables, you can set the put the computer board aside and concentrate on the top half case with the keyboard.

Be careful and use knife to pry up a corner of your original membrane keyboard from the plastic case. You should not need the knife for separating the rest of the keyboard and it is safer not to use it more than necessary -- you will find that the

35+ year old glue isn't that strong, and you can easily tear the keyboard away from the case and slip the flexible cables out of the case slot.

Now examine your new keyboard. A very short length of insulation has intentionally been left on the end of the two flexible cable to bending the stripped and tinned ends of the wire. Don't remove this protective insulation until after you have fed the flexible cables through the slot in the computer's upper case-half.

I suggest you now insert the keyboard flexible cable through the case slot. Before you insert the cables into the computer board connectors you should examine how this new keyboard aligns with the indented keyboard area in the case. When you understand and plan just how you are going to position the keyboard, you should use some strips of double-sticky tape or glue and attach the keyboard to the case.

I found that Scotch Scotch* brand Double-Sided tape that you can purchase from the stationery department of your local pharmacy, Staples, or Amazon works well, but you can use alternatives. I would not use very thick foam tape, because it might raise your keyboard so high that it might make it difficult for the two flexible cables to get through the slot in the case.

Once you have the keyboard cemented to the case top, it is time to grab the insulation at the end of one of the flexible cables and pull off the insulation. Do this to both cables and visually inspect them to make sure the stripped and tinned wires are all straight of the cable. If any are bent, you should straighten them. I find a pair of tweezers can be useful.

Now, it's time for your spatial aptitude test. Carefully examine the two cable connectors on the computer board. You need to align the 5 wires on the flex cable with the 5 spring contacts at the center of the small cable connector and insert the cable. I find grasping the cable very close to the end with my thumb and another finger works best. Then similarly insert the 8-wire cable.

Rotating the computer board in relation to the case top can be tricky. Go slow and gentle and watch out to clear the plastic standoffs on the case.

Align the computer board on the case top and replace the two small silver screws that secure the computer board. **DO NOT OVER-TIGHTEN THESE SCREWS** or you can break the plastic case standoffs.

You can then attach the bottom half of the computer case and secure it with some or all the screws for testing. AGAIN - DO NOT OVER TIGHTEN THE SCREWS.

You can use BASIC print statements to test all 40 keys of your keyboard:

```
PRINT "ASDFGHJKL" NEW LINE
PRINT "QWERTYUIOP" NEW LINE
PRINT "ZXCVBNM." NEW LINE
PRINT "1234567890" NEW LINE
PRINT "? ?" NEW LINE. ( To test the SPACE and SHIFT keys. )
```

After the you have confirmed that your new keyboard works, you can make sure you have all the screws replaced and replace the rubber feet. I find that the original glue on the rubber feet is insufficient to keep them on after being removed, and they get lost. I suggest you use some rubber cement or double sticky tape to make sure they stay on.

Congratulations! Enjoy your new keyboard.

A great demonstration of how much easier it is to use than the original is to type a long print statement and then use the SHIFT RUBOUT to delete characters. Wow! Isn't that better than the old keyboard?