
An alternative alphanumeric PLED display

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1. Introduction

As a BASIC-Tiger® expert you will usually use the Plug-and-Play-Lab with its four lines by 20 characters LC display. On the software side the device driver LCD1.TDD is an integral part of the Basic-Tiger® system. It organises the transmission of characters from BASIC-Tiger® to an alphanumeric display. This requires a display which contains either a HDD44780 controller or a compatible. The HDD44780 or any compatible controllers are virtually standard – most standard displays use it. In independent applications you can integrate such a display easily. Problems occur, however, if the display is used in a badly illuminated room or you cannot watch it directly in front. Then the clarity is limited. Even if you use an illuminated display, you could be facing some problems. Some illuminated displays consume extra current (at 5 V about 100 mA). We can forget about those disadvantages - since there is PLED technology (Polymer Light Emitting Diodes) for alphanumeric displays.

2. Display technologies

For many years alphanumeric displays have been based on LCD technology (Liquid Chrystal Display). There are a large amount of displays available, so that there should be one for every application. Figure 1 shows a standard plug-and-play-lab display without background illumination. Lately a PLED technology has been available. It is characterized by a much better readability under different lighting conditions and viewing angles and a lower current consumption. As an example for this modern technology we will test the PDC1602 by DELTA-OPTO with two lines with 16 characters each.

3. PLED display PDC1602 by DELTA-OPTO

The modern PLED display by DELTA-OPTO has two lines with 16 characters each and is also equipped with a HDD44780 compatible controller (figure 2). The datasheet is available at

<http://www.mpi.ch/attach/00000519.PDF>

Because of the low current consumption PLED modules are perfectly suitable for low power applications. Supply voltage range lies between 3.3 V and 5 V. All further voltages required for operation are generated internally. However, full brightness of the display is only reached at 5 V. The typical current consumption of the complete module at a “normal” display content and full brightness amounts to 15mA at a 5 V supply. A luminous pixel needs about 20 µA. If

brightness is reduced by the control input VBT, current consumption is diminished again, which prolongs the display's life.



Fig. 1 the familiar 4-lined Plug-and-Play-Lab LC display

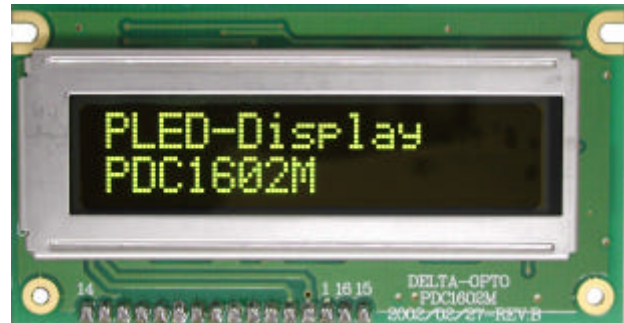


Fig. 2 PLED display PDC1602 ...this is not a trick... pixels do shine in this high contrast at a wide viewing angle!

With BASIC-Tiger® the PDC1602 display works at once. But you have to pay attention to the following issues:

- The author tested the display without any special adoption of the device driver (i.e. without any parameters at call-up) It is important for programming to that only 16 characters are displayed per line
- Although the display has the same kind of contacting as the standard display (16 pins in a row, distance 0.1“) the connections do not fit exactly. The display has to be turned by 180° and also displaced in order to guarantee the connection order (see figures 3 and 4)
- It is also easy to replace the LC displays by a PLED display in an existing system. Everything remains generally the same, apart from the connection order. The contrast control which is used by the BASIC-Tiger® standard LCD, however, has to be moved to a different position. If the potentiometer settings remain the same as with the standard LCD, you usually cannot see anything. It is the same when reinstalling the LCD! The protective resistor can remain at 100 Ω without any problems.

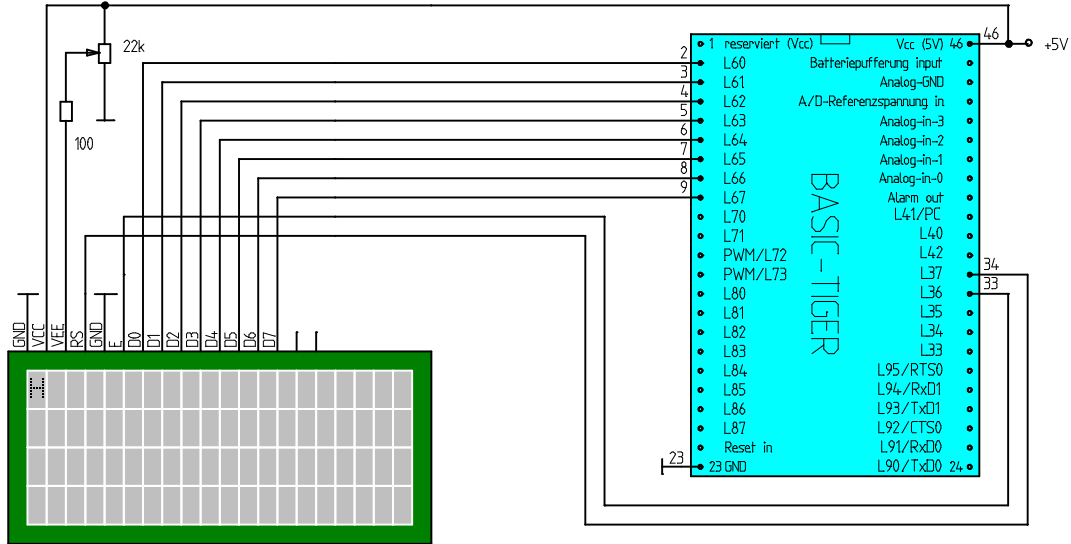


Fig. 3 Plug-and-Play-Lab Standard display wiring

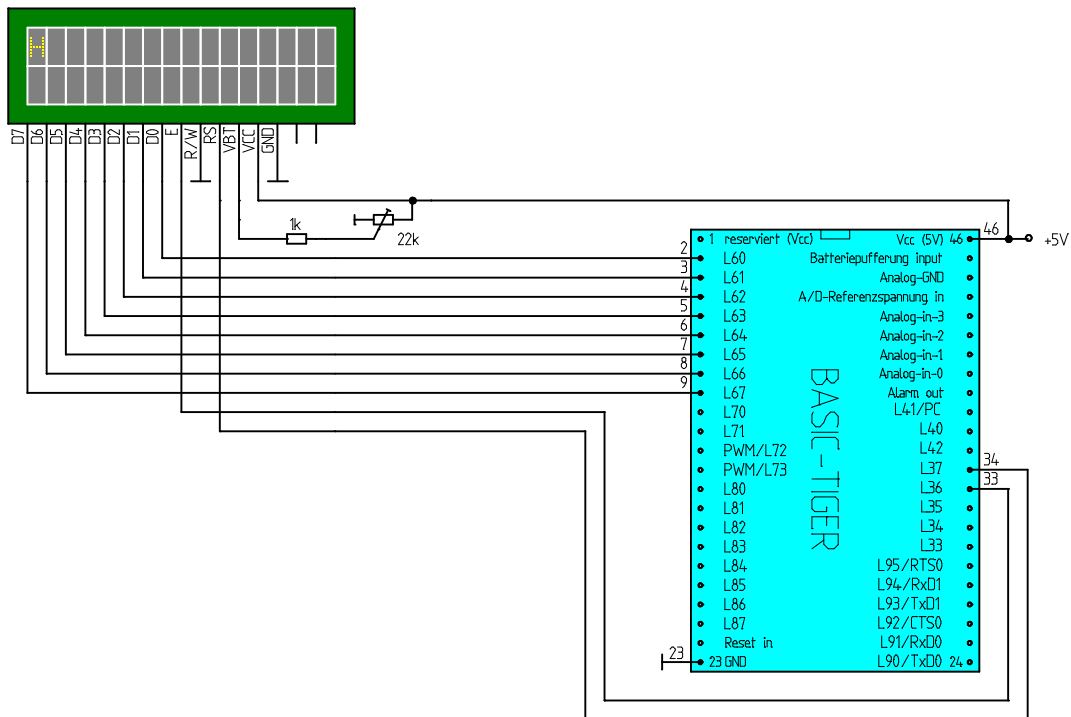


Fig. 4 Connection of the PDC1602 to BASIC-Tiger[®]

Have fun with your new display mode!