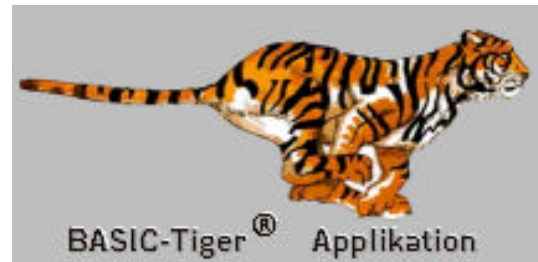


Data storage

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1. BASIC-Tiger® and file system

It is a situation familiar to you: your BASIC-Tiger® is the centre of an awesome measurement system, providing lots of data – and nobody can really utilize them. Or, in other words, how to get data generated in or by the BASIC-Tiger®, as easy as possible into other systems for analysis, e.g. into a PC. You might suggest the serial or parallel interface, as this solution did always work until now. But the actual problem for such applications is the effort necessary for transferring, storing, analysing and passing on such data. In its present form the BASIC-Tiger® can pass on data in almost any form to e.g. a serial interface. If the interface is connected to a PC, these data can also be viewed tolerably comfortable with a terminal program on a monitor. With a little more effort you can also save the data as a text or binary file and import it into other programs later. Here the effort is especially the allocation of a file name, saving into a directory of your choice and the later allocation of the data to the date/time of their creation.

How would you like a PC program, which handles all these tasks to a large extent automatically, which understands the BASIC-Tiger® at best and also is available completely free? In this application we will get acquainted to such a program, written with TestPoint® especially for the BASIC-Tiger®. This program FILE_01.TST has been created as a runtime-module and can be installed and uninstalled by the user as already described in the previous application (“BASIC-Tiger® and PC programs”). Thus we here can omit a detailed installation guide, first you need to “unzip” the ZIP-File FILE_01.ZIP into a directory of your choice, then you need to run SETUP.EXE and finally start the runtime-module FILE_01.TST with one of the two variants described.

2. The PC-program FILE_01.TST

What exactly is the function of FILE_01.TST? The program awaits serial data in string format (maximum 255 bytes, end at character “CR” or at 255 bytes), displays them as text and saves them automatically in a text file. Automatically means that every time, when the BASIC-Tiger® is sending data, a new text file is generated with a new name. You can previously determine where. All hard disks, floppy disk drives or special media (LS 120 or ZIP), which momentarily appear in the Explorer, are available. We will deal with details later. First we would like to get acquainted to the individual “control elements”.

Fig. 1 shows how our program looks like optically. On the left side there are the elements enabling an easy adjustment of all parameters necessary for a serial interface. Right hand all the elements for the file transfer are located. Basically everything is self-explaining, so that working with FILE_01.TST can be explained in telegraphic style.

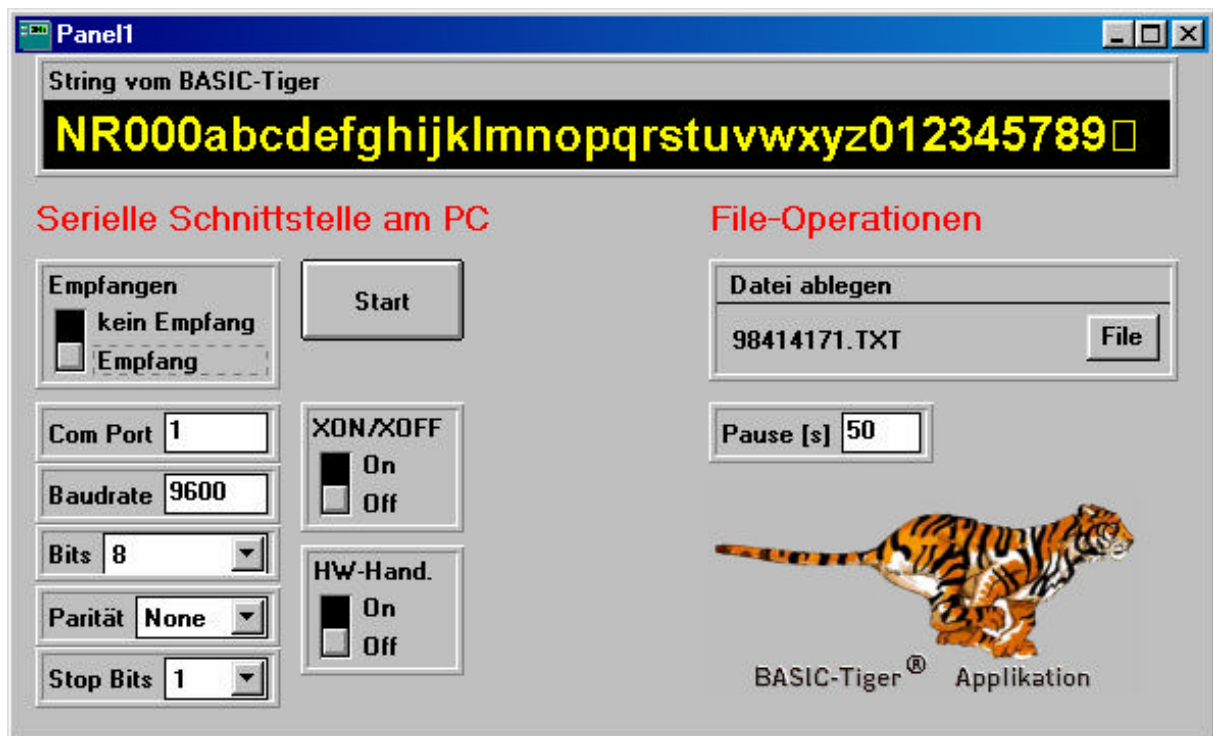


Fig. 1 The program FILE_01.TST

2.1. Handling

- After starting the program, at first all parameters in the fields of the serial interface (Com Port, Baud rate, Bits, Parity, Stop Bits, XON/XOFF, HW-Handshake) are checked and adjusted if necessary. On the right side we find a field (Pause), to which we will refer later. Initially we leave the setting at 50 seconds.
- Next the BASIC-Tiger®, which has been loaded with the demo-program FILE_01.TIG, gets connected via SER1. Please note, that you either use BASIC-Tiger® with a built-in RS232 interface or an equivalent converter (application note 28 “An RS-232 adapter”) with stand-alone systems. You don’t have to take care of this using the Plug & Play Lab.
- If everything is ready, press the start-button (with the mouse) so that all preset values are taken over. At the same time, a dialog box appears, in which you can select the target drive and target directory for the data files to be saved (fig. 2). In the example this is drive B, in which you already can see several files with names like “98413910.txt”. Like in the Explorer you select a drive and directory with a double click. You don’t need to enter file names and types, FILE_01.TST does it by itself. If everything is o.k., press the “OK” button and close the window.
- Now use the mouse to set the switch “Empfangen” (Receive) to position “Empfangen”. By doing so, the selected COM interface of the PC is being opened and awaits data. The interface however waits only 20 seconds (Timeout), you therefore need to send the first data quickly. You can do so by pushing the RESET button on the BASIC-Tiger® board.

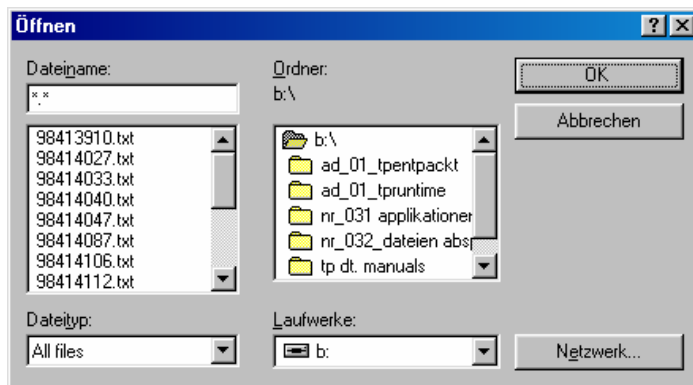


Fig. 2 The file dialogue when pushing “Start”

- The next data transmission in the program FILE_01.TIG takes place after 60 seconds. You can track this process now and also have a look at the emerged data later. The process finishes after 30 minutes, since no data are being transmitted anymore and the program reports an error (Timeout of serial interface).
- You can also cancel the data communication with the switch “Empfangen” and restart it later. Don’t worry about the fact that even after switching off one file is still being transmitted. After that transmission really ends.

That has been all, now the program should be working.

Now a couple of words about the automatically generated file names. Almost every system of such names holds the danger of double allocations. For that reason a tricky method is used, solving this kind of problem. As file name, a number is being used which derivates from the PC time. TestPoint® calculates the time in seconds passed since the 1-Jan-1970 (by the way very similar to the BASIC-Tiger®!). Unfortunately this number has 9 digits, so it cannot be used as a filename just like that. A division by 10 and conversion to integer from that puts things right. So every 10 seconds a new number and therefore a new filename is created, which will not occur again for a lifetime. There is one more advantage, since the point in time of the data transmission can be directly derived from the file name.

The data presently transmitted are not that impressive. Nevertheless it should at least be shown here how such a data string looks like:

Filename: **98414177.TXT**
Content: **NR001abcdefghijklmnopqrstuvwxy012345789**

2.2. Modifications

Runtime modules (not only under TestPoint®!) generally cannot be modified by the user. Therefore “important” things and appropriate possibilities have to be planned and included by the programmer in advance. In this chapter we will talk about some things that you can adjust:

Data sequence

At starting condition (program FILE_01.TIG) data is transmitted every 60 seconds. In case the COM interface of the PC is waiting for data all the time, the PC cannot much else. Therefore FILE_01.TST has been programmed so that after a transfer of measured data the COM port is being closed for 50 seconds. Immediately before the next data transfer the COM port is opened again. This is either “rewarded” with incoming data or, in case of missing data, “punished” with a timeout error from the program. Timeout is set fix to 20 seconds for FILE_01.TST. So if you request other transfer intervals, you must first set another time in your BASIC-Tiger[®] program (e.g. 10 minutes or 600 seconds). After that the timing window of FILE_01.TST must be adjusted, i.e. immediately before the receipt of new data the COM interface must be opened. In the example this could happen 10 seconds before or better 590 seconds after the receipt of the last data. So if you set the pause to 590 seconds, the COM interface should then be ready for the next data transfer.

Amount of data

Currently the data string is limited to 255 bytes. On one hand 255 bytes are quite an amount, on the other hand, however, it might not be enough for some applications. You can possibly help yourself by transmitting the data more often (consider in this case the timing windows and the necessary saving times, e.g. at floppy disk operation!). The program is however not suited for transferring larger amounts of data, for that there will be another one later. The advantage of FILE_01.TST is that measuring systems based on the BASIC-Tiger[®] can transmit data in relatively large intervals (how would you like a radio data transfer in accordance with application note 25 “Wireless data transmission with BASIC-Tiger[®]”), which are received and saved on the PC level.

3. The BASIC-Tiger[®] program FILE_01.TIG

The demo program FILE_01.TIG generates a compound string from an index variable n (0...30, number of data transfer) and from a test string containing several ASCII characters, which is displayed on the LC display and put out via the serial interface SER1. If you want to use the system consisting of the PC and BASIC-Tiger[®] program reasonably, you of course want to send your own strings with genuine contents. You can upgrade the present program for this purpose or write a very new one. To be considered are here:

- the interface itself (SER1 or SER0),
- the interface parameters, which must of course correlate with the PC program,
- the “sending times”, that are adjusted in accordance with chapter 2.2.,
- the amount of data in the string must not exceed 255 bytes and should contain only ASCII characters,
- the character <CR> is recognized as end of data. It is send automatically after every print command to the serial interfaces, that does not end with the character <;> or <, >.