Manual
RS232 Serial Buffer

W&T

Models	88102
	88256
	88257
	88409
	88410
Release	1.0

RS 232 Serial Buffer

W&T RS232 Serial Buffers are used for fast buffering of serial data between an RS232 data transmitter and RS232 receiver.

Function

The buffer works bi-directionally at a maximum transmission rate of 115.2kbps and allows separate configuration of the input and output port with respect to transmission speed, data format and handshake procedure. In the direction of the receiver the entire memory capacity minus the reverse channel capacity of 4kB is available. This memory is reserved for buffering data from the peripheral to the computer.

Configuring the buffer

Before starting up for the first time, the buffer ports must be configured for the desired transmission parameters.

Serial parameters

On the rear side of the buffer are three DIL switch blocks, with the center (S2) block used for configuring the input port and the right (S3) block the output port. The assignments for these two DIL switch blocks is identical and can be found on the part label. The ability to configure both ports separately permits you to work on the computer side with a significantly higher transmission speed than the peripheral allows. This can drastically increase the efficiency of the buffer.

In addition, you can use the buffer as a converter between two RS232 devices whose transmission parameters or handshake procedure are not otherwise compatible.

Modes

In standard mode (S1.8 = „off") the RS232 Serial Buffer functions like a data buffer using a FIFO principle. The data leave the buffer on the output in exactly the same order as they were written to the buffer by the computer. Pressing the „copy" key in this mode causes the entire buffer contents to be output again, whereas „reset" clears the buffer contents.

In block mode (S1.8 = „on") the computer can write as many data blocks as desired to the buffer, which the buffer then administers as separate print/plot jobs. The buffer recognizes the end of a data block from a pause in the transmission of at least 15 seconds. Each individual job can be output as often as desired by pressing the „copy" key. The „next block" key activates output of the next stored job. After outputting one data block, the buffer stops outputting until the „copy" or the „next block" key is pressed. The „reset" function clears the buffer contents in this mode as well.

Pin assignments and buffer connection

The input of the buffer is implemented as a 25-pin SUB-D socket using DTE, so that as a rule the printer/plotter cable already present between the computer and buffer can be used.

The buffer output uses a 2m long serial cable with a 25-pin SUB-D male using DCE at its end, which in most cases can be plugged directly in to the peripheral.

In a very few cases it may be necessary to jumper pins 5 and 6 inside the 25-pin SUB-D male connector. An example for connecting the buffer to a 9- and 25-pin PC and to a plotter is shown in the illustration below:
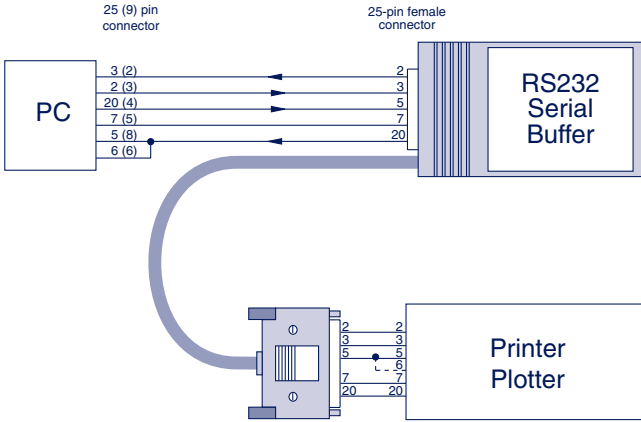
Diagnostics

Starting up an RS232 port is often problematical, since both the pin assignments and the transmission parameters need to be correct in order to ensure error-free data transmission. To check the configuration the Serial Buffer provides two functions, the settings dump and the Power/Error LED, which can be very useful during installation.

Configuration dump

Pressing and holding down the „Reset" key while turning on the RS232 Serial Buffer and then releasing it causes the buffer to send its current configuration on the output port.

The output is in HPGL format, so that the text is readable for printers or plotters. If the handshake configuration is incorrect, the output will be in individual characters. An extremely slow printout is therefore an indication that the buffer output port handshake is not being correctly handled. Outputting the configuration on the peripheral device is a simple way of testing communication between the buffer output and the terminal device.

Power-/ Error-LED

The Power LED of the buffer is normally constant-on after pow-
ering up the device. If this LED starts flashing during operation,
this indicates an incorrect data format setting. The buffer indi-
cates detected parity and frame errors by flashing the Power
LED. Characters having frame errors are suppressed by the
buffer to prevent transmission of incorrect characters which are
generated when turning on the computer due to uncontrolled
actions on the data lines. If the Power LED starts flashing im-
mediately after powering up the computer, this does not nec-
essarily indicate an improperly configured data format.

Technical data

Capacity:	256KB, 1MB, 4MB
Baud rate:	50..115200 baud
Data format:	7,8 data bits, no, even, odd Parity
Flow control:	Hardware-Handshake or XON-/XOFF protocol
Code conversion:	Single code conversion in both directions using EPROM patch
Supply voltage:	AC adapter (included)
Current draw:	approx. 100mA
Buffer input:	25-pin SUB-D female integrated in buffer housing, DTE
Buffer output:	25-pin SUB-D male incl. 2m cable, DCE
Housing:	Plastic, 124x74x21 mm
Weight:	approx. 500 g incl. power supply
Included:	RS232 Serial Buffer AC adapter for office applications

RS232 Serial TC buffer

W&T RS232 billing data buffers are used for buffering call and billing data between telephone equipment and the evaluating PC.

Function

The TC buffers are especially adapted versions of the standard buffer for use with telephone equipment: The buffer output port is always disabled after power-up so that incoming data are not lost after a buffer reset. The interface to the PC must be explicitly enabled and disabled using control sequences.

The utility „TK32.EXE", which is available free of charge over the Internet, allows the data to be read using any PC. The transmission parameters on the buffer must be set for 9600 baud, 8 data bits and „no parity". After connecting the buffer to the computer, you can start reading by using the following command line:

tk.com[1|2] [filename]

Buffer display elements

The two integrated LEDs on the buffer have the following meaning:

The **green** Power LED indicates the presence of correct supply voltage. The **red** LED indicates the memory status and recognizes the following states:

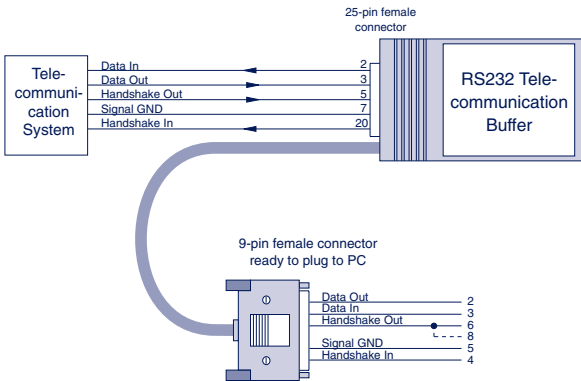**OFF:** The memory is empty; there are no call data.
ON: There are call data. Memory utilization is below 80% of the available memory capacity.
FLASHING: There are call data. Memory utilization is above 80% of the available memory capacity.

Pin assignments and buffer connection

The buffer input is implemented as a 25-pin SUB-D socket with DTE function, so that as a rule any standard serial printer cable can be used between the TC system and the buffer. The buffer output uses a 2m long serial cable with a 9-pin SUB-D female using DCE at its end, which can be plugged directly in to the COM port of a PC.

25-pin female connector

Tele-communi-cation System	Data In	2		RS232 Tele-communication Buffer
	Data Out	3		
	Handshake Out	5		
	Signal GND	7		
	Handshake In	20		

9-pin female connector ready to plug to PC

Data Out	2
Data In	3
Handshake Out	6
	8
Signal GND	5
Handshake In	4

Configuring the serial parameters

On the rear side of the buffer are three DIL switch blocks, with the center (S2) block used for configuring the interface to the TC system and the right (S3) block the output interface to the PC. The assignments for these two DIL switch blocks is identical and can be found on the part label.

Control sequences

Data flow between buffer and PC is controlled using code sequences whose function will be explained in brief on the following pages. The values for all code sequences are given in hexadecimal representation.

Start of data transmission

The command 1Bh 02h 0Dh outputs all the incoming data. Data flow control is handled according to the handshake procedure set on Switches S2.1 and S3.1.

Stopping data transmission

The command 1Bh 03h 0Dh disables the output port. All incoming data are stored. After turning on the buffer or after a reset, the interface to the PC is always disabled.

Outputting memory resources

When the output is disabled, command 1Bh 07h 0Dh can be used to get the memory space in % of the total capacity which is being used to store call data. The buffer replies with a 2-byte ASCII string plus a carriage return.

Identification

In addition to the above commands, the TC Buffer model 88410 is able of providing a serial number. The buffer replies to the command 1Bh 15h 0Dh with its serial number in the form of a 10-byte long ASCII string plus carriage return (0Dh).

Additional modem functions for Model #88410

Setting switch S1.1 to the ON position the TC Buffer Model 88410 allows the device to work in Hayes modem mode. If more than 80% of the memory capacity is used, the buffer itself uses AT sequences to try and establish a connection with a computer, which reads out the stored data.

First „*ATDS=0" + CR* is output. This command causes the con-
nected modem to dial the call number contained in its speed
call location 0 (see modem manual). Now the buffer expects
the identification command within 60s. If this does not arrive,
the buffer sends a „ATHO" + CR, and after 10 minutes have
elapsed makes another dialing attempt.

Since modems from different manufacturers can vary widely in
their configuration options as well as in how they handle the
individual control lines, only some general prerequisites for mo-
dem operation of the TC Buffer can be described here. If you
are unsure or if there are difficulties, first consult the manual
for your modem.

Settings for modem operation on the buffer

Since the TC Buffer does not support all RS232 control lines,
only the RxD, TxD and ground lines should be connected on
the modem. Handshaking should be set for Xon/Xoff.

Settings on the modem

The internal speed dial memory of the modem must contain the
call number to be dialed when there is a memory overflow
(AT&ZO=[call number]). The evaluation and handling of the
RTS and DTR control inputs and of the CTS and DSR outputs
should be turned off (AT&DO, AT&R1, AT&SO). If possible, flow
control should be configured for transparent Xon/Xoff.

Technical data

Capacity:	256KB, 4MB
Baud rate:	50..115200 Baud
Data format:	7,8 data bits, no, even, odd Parity
Flow control:	Hardware-Handshake or XON-/XOFF protocol
Code conversion:	Single code conversion in both directions using EPROM patch
Supply voltage:	5V regulated
Current requirements:	approx. 100 mA 5V regulated or Pin 25 on the telephone equipment, AC adaptor supplied.
Buffer input:	25-pin SUB-D female integrated in buffer housing, DTE.
Buffer output:	9-pin. SUB-D female incl. 2m cable plug-ready for PC
Housing:	Plastic housing, 124x74x21 mm
Weight:	approx. 500 g incl. AC adapter
Included:	RS232 Billing Data Buffer Mini Gender Changer, #11570 AC adapter for office use.