

Manual

RS232 Multi Computer Adapter



**Release
Model**

**1.2
85603**

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The W&T RS232 Multi Computer Adapter model 85603 permits automatically controlled, bi-directional connection of two data sources to one peripheral device.

With this unit two PCs, a serial printer, a plotter, a portable scanner or a card reader for example can be shared without requiring manual intervention to switch them: automatic selection is on the first come, first served principle.

The interfaces of the Multi Computer Adapter can be configured independently of each other, so that converting the baud rate, data format and handshake procedure is no problem.

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RS232 Multi Computer Adapter, Model 85603

The W&T RS232 Multi Computer Adapter 85603 permits a bi-directional connection of two serial data sources to a peripheral device. Automatic switching between the two senders is done on a time-controlled basis: The data sender that wants first to output something automatically blocks the outputs from the other source. If the data sender implements a pause, both inputs are again ready to receive after a configurable timeout time. Two LEDs on the front panel of the switch indicate which of the two input channels is currently active.

Supply voltage

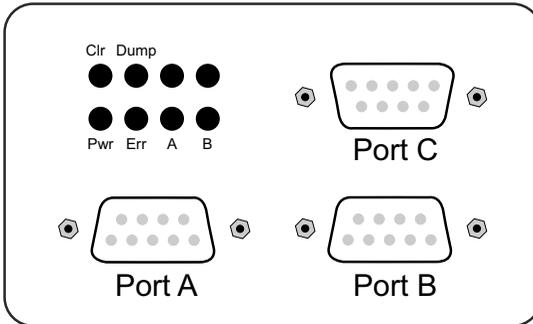
The supply voltage for the T-switch is provided by an integrated switched-mode power supply. This features a variable input voltage range and allows the T-switch to be powered using the AC adapter provided or alternately by any AC or DC voltage between 12 and 24V. The supply connection is reverse polarity protected and is made using the included plug-in screw terminal.

Important: When powering the T-switch externally you must ensure that the supply voltage used is potential-free. Voltage sources with a ground reference can damage the T-switch and/or the connected serial devices. We therefore recommend using the power supply included in the scope of delivery.



Mechanical features and enclosure

The T-switch comes with three 9-pin RS232 ports and is integrated into a 45mm wide plastic housing for mounting on standard rails conformal with DIN EN 50022-35.



Configuring the serial ports and T-switch operating modes requires opening the housing of the device. For this purpose it is advantageous to screw a SUB-D plug with body to one port on the T-switch and use the attached plug to assist in pulling off the housing cover.



Wiring assignments

The RS232 ports A and B are implemented as SUB-D female connectors with DCE pin functions, and port C as a SUB-D male connector with DTE pin functions. This design ensures that the T-switch can be wired into the majority of applications with standard 1:1 cables. In addition, this pin configuration make installation and startup easier, since the data transfer can be tested first without involving the T-switch by simply connecting the cables together.

The pinout for the individual ports can be found in the following tables.

RS232 input Port A and B with DCE pin functions:

| Pin# | Function | Signal | Direction |
|------|---------------|--------|-----------|
| 1 | always "on" | DCD | output |
| 2 | data out | RxD | output |
| 3 | data in | TxD | input |
| 4 | handshake in | DTR | input |
| 5 | signal GND | GND | GND |
| 6 | handshake out | DSR | output |
| 7 | not connected | RTS | input |
| 8 | handshake out | CTS | output |
| 9 | always "off" | RI | output |

RS232 output Port C with DTE pin functions:

| Pin# | Function | Signal | Direction |
|------|---------------|--------|-----------|
| 1 | not connected | DCD | input |
| 2 | data in | RxD | input |
| 3 | data out | TxD | output |
| 4 | handshake out | DTR | output |
| 5 | signal GND | GND | GND |
| 6 | not connected | DSR | input |
| 7 | always "on" | RTS | output |
| 8 | handshake in | CTS | input |
| 9 | not connected | RI | input |

Display and control elements

The device uses four LEDs, a green „Power“ for indicating correct supply voltage and the LEDs marked „A“ and „B“ to indicate which input channel is active.

The LED marked „Error“ indicates the presence of parity or framing errors in running data traffic and can only be cleared explicitly by pressing the „Clear“ key. The „Clear“ key resets the T-switch and deletes all internal data and error memories.

Pressing the „Dump“ key when the device is turned on outputs the current setting of the T-switch on whichever serial port has been selected using the DIL switches.

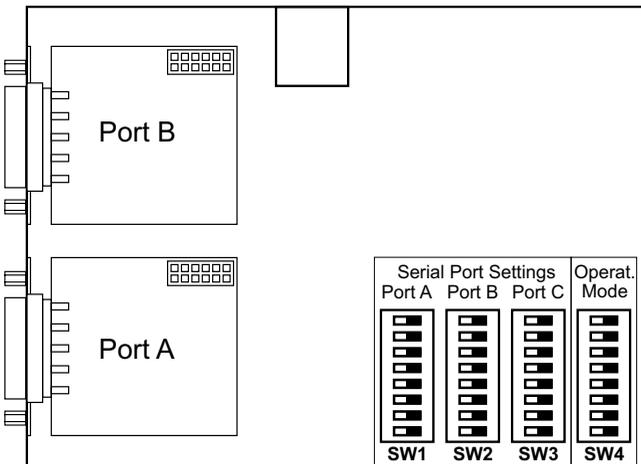
Additional information about this function can be found in the section Diagnostic functions > Setting-dump.

Configuring the serial ports

All three ports on the T-switch can be configured for transmission rate, data format and handshake procedure completely independently of each other. This feature allows you to connect the T-switch to terminal devices which use different serial data formats.

The modular construction of the T-switch allows you to incorporate other interface modules to convert the interface type within the device. Especially when larger quantities are involved changing over the T-switch with other interface modules represents an economical alternative to the external converters otherwise commonly used. Please contact us with any requirements for special versions of the T-switch.

You set the serial parameters using three DIL switch banks SW1 ..SW3 inside the device. The position and arrangement of the DIL switch banks with respect to the corresponding port can be seen in the following sketch.



Serial format

Baud rate, number of data bits and any parity bit which may be used can be configured separately for each port on the T-switch, so that the format can be adapted to any connected terminal device.

Handshake procedure

All serial ports on the T-switch can be set to hardware handshake or XON/XOFF handshake independently of each other. Operating the T-switch with no handshake is not recommended.

When one of the internal buffers in the T-switch is nearly filled with data, an XOFF code (13H) is output on the corresponding port and for the next received character the hardware handshake output is set to ‚Block‘ (negative level). Once the buffer has been emptied again, an XON code (11H) is output and the hardware handshake output is set to ‚Enable‘ (positive level).

If the T-switch receives an XOFF code or detects a block level (negative level) on the hardware handshake input, it stops sending data on the corresponding port no later than one byte after this state is detected. If the T-switch receives an XON code or detects an enable level (positive level) on the hardware handshake input, it resumes sending data.

The XON and XOFF codes are used only for the handshake; these codes are not data and are also not allowed to be contained in the user data. If a hardware handshake is used however and the T-switch is correspondingly configured, the XON and XOFF codes are treated as normal data.

When hardware handshake inputs are open or improperly wired, the T-switch may send no data on the affected port. If you use only software handshake and configure the T-switch accordingly, this problem will of course not occur.

Setting the format - DIL switches

The DIL switch banks SW1, SW2 and SW3 have the same scope of functions for all three ports: the individual switches determine the transmission speed, the number of data bits, the parity and the handshake procedure of the respective port. The function of the individual switches can be seen in the following tables:

| handshake | S1 |
|--------------------|-----|
| hardware handshake | off |
| software handshake | ON |

| data bit | S6 |
|------------|-----|
| 7 data bit | off |
| 8 data bit | ON |

| parity | S7 | S8 |
|-------------|-----|-----|
| no parity | X | off |
| odd parity | off | ON |
| even parity | ON | ON |

| baudrate | S2 | S3 | S4 | S5 |
|-------------|-----|-----|-----|-----|
| 150 Baud | off | off | off | off |
| 300 Baud | ON | off | off | off |
| 600 Baud | off | ON | off | off |
| 1200 Baud | ON | ON | off | off |
| 2400 Baud | off | off | ON | off |
| 4800 Baud | ON | off | ON | off |
| 9600 Baud | off | ON | ON | off |
| 19200 Baud | ON | ON | ON | off |
| 38400 Baud | off | off | off | ON |
| 57600 Baud | ON | off | off | ON |
| 64000 Baud | off | ON | off | ON |
| 76800 Baud | ON | ON | off | ON |
| 115200 Baud | off | off | ON | ON |

Modes

The RS232 Multi Computer Adapter model 85603 offers two operating modes, which are described in the following.

In all operating modes two LEDs on the front panel of the Multi Computer Adapter are used to indicate which of the two available data paths is currently active.

A character-activated path between Port A and C or Port B and C supports bi-directional data transfer between the respective connected ports. The return direction from Port C to A or Port C to B is however not enabled until the data sender on Port A or B has provided for opening of the channel. If neither of the two paths is activated, any data arriving at Port C are rejected.

Manual mode

The simplest of all operating modes enables manual toggling of the bi-directional connection between Port A and Port C or between Port B and Port C.

Pressing the key below LED A opens path Port A <> Port C, whereas pressing the key below LED B activates the path Port B <> Port C. After the selector switch is reset the Port A <> Port C channel is always active. LEDs A and B indicate which channel is active.

The selector switch uses a handshake signal in an XIFF character to automatically block data flow on the non-active channel.

Standard mode

In this mode switching between both data sources is automatic on a time basis: the data sender that wants to send something first uses a handshake stop signal or XOFF character generated by the T-switch to automatically block sending from the other source. If the first data sender inserts a pause, then the second input is again ready to receive after a settable switching time. The multi-computer adapter automatically controls the data flow in this mode using the handshake procedure set on the respective port.

Transparent mode

The data sender that wants to send something first is immediately connected to the serial terminal device. All data received on the other input of the T-switch are rejected as long as the terminal device is connected to the first data sender. Two conditions must be met in order to enable the second input:

- The first data source has sent no more data since a settable switching time.
- No more data have been received on the second input since a likewise configurable timeout time.

This mechanism prevents the input from being activated in the middle of a protocol block and thereby a fragmented data record from reaching the receiver.

In this mode the Multi Computer Adapter supports only the two data lines RxD and TxD. The T-switch does not interfere in the data flow in this mode, but rather transparently passes the received data from the sender to the respective receiver. The terminal devices themselves must provide for any required control of the data flow.

Setting the modes

The two modes of the device are selected and configured using the DIL switch bank SW4. In addition to selecting the operating mode, the switchover time for both mode types can be set in fixed increments of 5, 15, 30 and 120 seconds.

For transparent mode you can also configure the timeout in steps of 0, 30, 90 and 500 ms.

The function of the individual DIL switches in switch bank SW4 is shown in the following table:

| Operating modes | S1 | S2 |
|------------------|-----|-----|
| Manual mode | off | off |
| Standard mode | ON | off |
| Transparent mode | off | ON |

| Dump Output | S3 | S4 |
|-------------|-----|-----|
| Port A | off | off |
| Port B | ON | off |
| Port C | off | ON |
| All ports | ON | ON |

| Switching time | S5 | S6 |
|----------------|-----|-----|
| 5 seconds | off | off |
| 15 seconds | ON | off |
| 30 seconds | off | ON |
| 120 seconds | ON | ON |

| Timeout | S7 | S8 |
|------------------|-----|-----|
| 0 milliseconds | off | off |
| 30 milliseconds | ON | off |
| 90 milliseconds | off | ON |
| 500 milliseconds | ON | ON |

Diagnostic functions

Starting up an RS232 port is often accompanied by difficulties, since both the pin assignments as well as the transmission parameters need to agree in order to enable errorless data transmission.

The RS232 Multi Computer Adapter 85603 has a settings dump function integrated that allows you to check the configuration, which can be quite useful during installation.

Settings dump

As a first test the settings dump integrated in the T-switch can be used to automatically generate a text which shows all the programmed settings in the 85603.

The settings dump has multiple functions:

- Testing the data and ground line connection
- Testing the transmission parameters
- Concise output of all settings
- Handshake test for data output from the 85603

To be able to generate the settings dump even under improper handshake conditions, the dump is even output if the port is blocked, though at a very slow speed. This means:

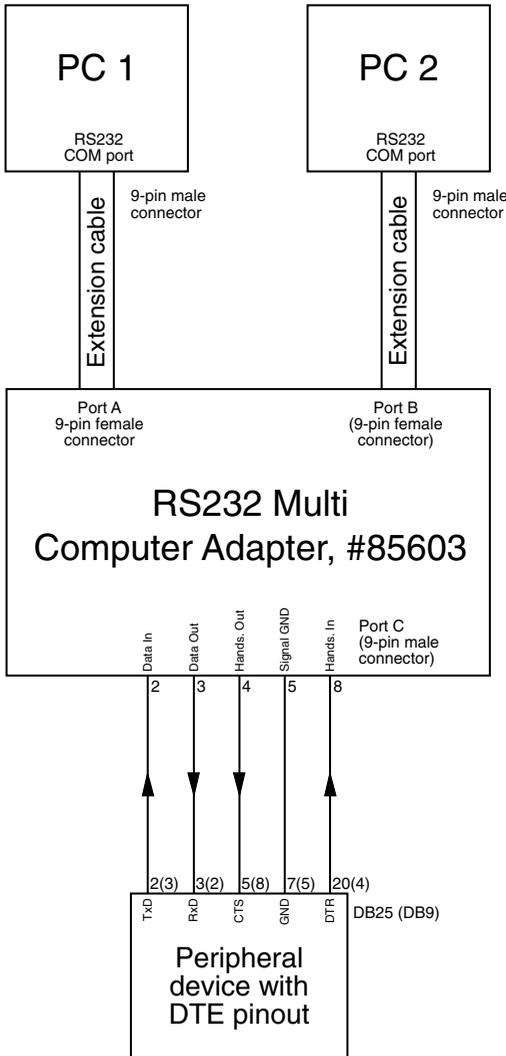
- Handshake enabled → Fast dump output
- Handshake blocked → Slow dump output

Hold down the „Dump“ key and then connect the T-switch to its power supply. After releasing the key the port set on the DIL switches SW4.3 and SW4.4 generates the following output:

```
PU 40,6000;;SI 0.2,0.3;DT
LB
LB RS232 MULTI COMPUTER ADAPTER, 0MBYTE
LB VERSION 1.x
LB          TRANSPARENT MODE (TIMEOUT MODE)
LB
LB PORT A:  BAUD          9600
LB          DATA          8
LB          PARITY        NO
LB
LB          HANDSHAKE     HARD
LB
LB PORT B:  BAUD          9600
LB          DATA          8
LB          PARITY        NO
LB
LB          HANDSHAKE     HARD
LB
LB PORT C:  BAUD          9600
LB          DATA          8
LB          PARITY        NO
LB
LB          HANDSHAKE     HARD
LB
```

Connection example

Two computers share a peripheral device using a hardware handshake connection



Technical Data

| | |
|-------------------------|---|
| Serial ports: | 3x RS232, all ports independently configurable |
| RS232 inputs Port A, B: | 9-pin SUB-D female connectors with DCE pin functions |
| RS232 output Port C: | 9-pin SUB-D male connector with DTE pin functions |
| ESD compatibility: | up to 15kV per IEC 801-2, Level 4 |
| Baud rate: | 150 .. 115.200 baud |
| Data format: | 7, 8 data bits, No, Even, Odd Parity |
| Handshake: | Optional hardware or XON-/XOFF handshake |
| Supported signals: | RxD, TxD, CTS, DTR |
| Operating modes: | Standard and transparent mode |
| Switchover time: | Settable switchover time of 5, 15, 30, 120 seconds (other values on request) |
| Supply voltage: | AC adapter included or potential-free 12-24V AC/DC |
| No-load current: | typ. 25 mA @24V DC |
| Ambient temperature: | Storage: -40..+70°C Operating: 0..+60°C with external 24V supply |
| Housing / Dimensions: | Plastic housing for standard rail mount per DIN EN 50022-35, 105 x 75 x 45mm |
| Weight: | approx. 500g incl. power supply |
| Scope of delivery: | RS232 Multi Computer Adapter, Model 85603 AC adapter for office use |

Declaration of Conformity

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W&T Interfaces for TCP/IP, Ethernet, RS-232, RS-485, USB, 20mA, Glasfaser, Kunststoff-LW, Infr., SNMP, OPC, IO digital, IO analog, ISA, PCI

**Declaration of conformity
according to paragraph 10.1 of directive 89/336/EWG**

Wiesemann & Theis GmbH hereby confirms that the products

| | |
|---|--------------------|
| RS232 Multi Computer Adapter, 0 MByte | Model 85603 |
| RS232 Universal Serial T-Switch, 4 MByte | Model 85643 |
| RS232 Universal Serial Buffer, 4 MByte | Model 88642 |

fulfill the requirements of the directives / regulations specified below:

1. Emission according to
 - 1.1. EN 55022 Cl. B (1998) +A1 +A2
 - 1.2. EN 61000-3-2 (2000)
 - 1.3. EN 61000-3-3 (1995) + A1
2. Noise Immunity according to EN 61000-6-2 (2001):
 - 2.1. EN 61000-4-2 ESD
 - 2.2. EN 61000-4-3 Radiated Immunity
 - 2.3. EN 61000-4-4 Burst
 - 2.4. EN 61000-4-5 Surge
 - 2.5. EN 61000-4-6 Conducted Immunity
 - 2.6. EN 61000-4-8 H-Field
 - 2.7. EN 61000-4-11 Supply Voltage Dips and Interruptions
3. Product-specific Low-Voltage Directive for communications technology
 - 3.1. EN 60950 (2003)

Wuppertal, 06/16/2006


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