ELDAT GmbH
Im Gewerbepark 14
D-15711 Königs Wusterhausen
Tel. + 49 (0) 33 75 / 90 37-0
Fax: + 49 (0) 33 75 / 90 37-90
Internet: www.eldat.de
E-Mail: info@eldat.de

Title: **Specification RTR09**
USB Transceiver Easywave

Version: SP_RTR09_EN_0809

Date: 2009-08-18

Contents

1. General note

To test the functional efficiency of your USB transceiver, Microsoft Windows ® enables you to call the Hyper-Terminal and try out some of the functions using the interface description (see Chapter 3, page 5).

2   Configure HyperTerminal

2.1   Start HyperTerminal

To read out the key codes, you must start the HyperTerminal in Windows.

For this, go, under "**Start/Programme/Accessories/Communication**" to the command button and select **HyperTerminal**".

Now you can configure your connection in HyperTerminal:

1. You can choose any name for your
   connection (e.g. USB Transceiver)
   and select a symbol in the field below.

   Finally, confirm your input with **"OK".**

2. In the box **"Make connection via:"**
   select the corresponding interface. (For information
   about which USB Transceiver interface to select,
   see device manager.)

   In our example, the USB Transceiver is controlled via
   COM 4.
   Select **"COM 4"** and confirm with **"OK".**

3. Now set the box **"Bits per Second:"**
   to the standard value of **"57600"**

   and the box **"Flow control:"** to **"none"**.

   Confirm your input with **"Apply".**
   or "**OK"**.

2.2 Receive transmission codes

After successfully setting up your Hyper-Terminal, the following user interface is available to you.

Now it is possible for you to view a hexa-decimal display of the various transmission and key codes. For this, just actuate one of your Easywave transmitters, making sure that the USB Transceiver is currently within range of the transmitter.
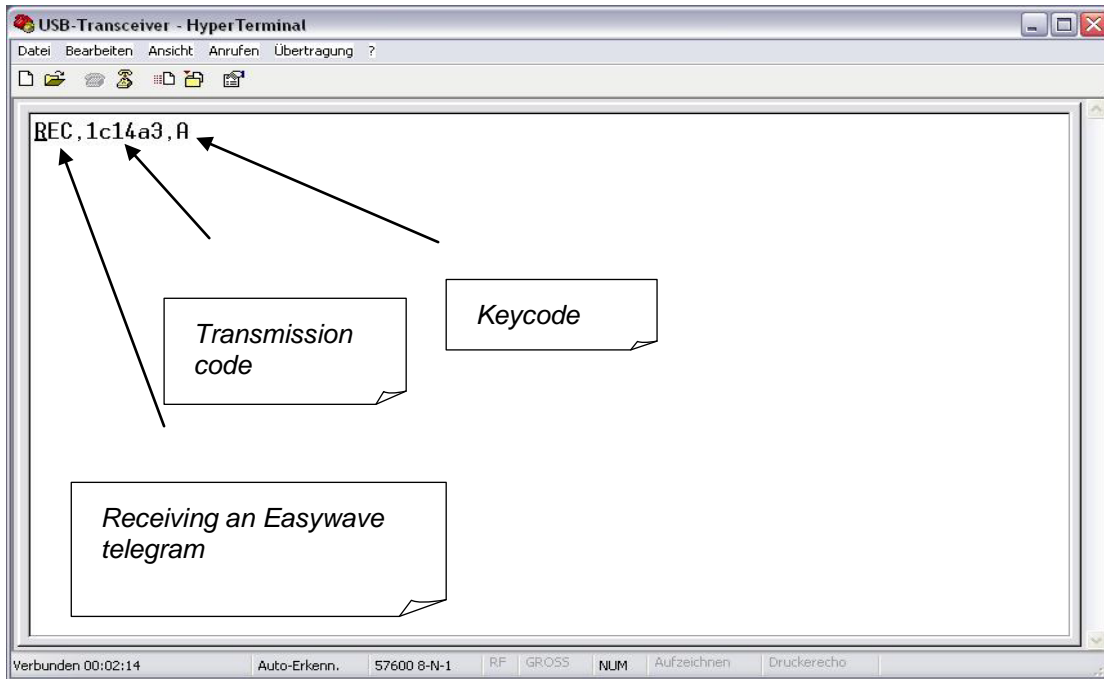
To display a list of transmission codes and other commands, you should input further settings in the Hyper-Terminal.

For this, under **"File /Properties/Settings"** select the button **"ASCII Configuration"** and under **"Settings for receiving ASCII data",** tick the box **"On receipt, add line feed at end of line"**

To display your inputs as a list, put a second tick in the box **"Local echo for input characters"** under **"Settings for sending ASCII data".**
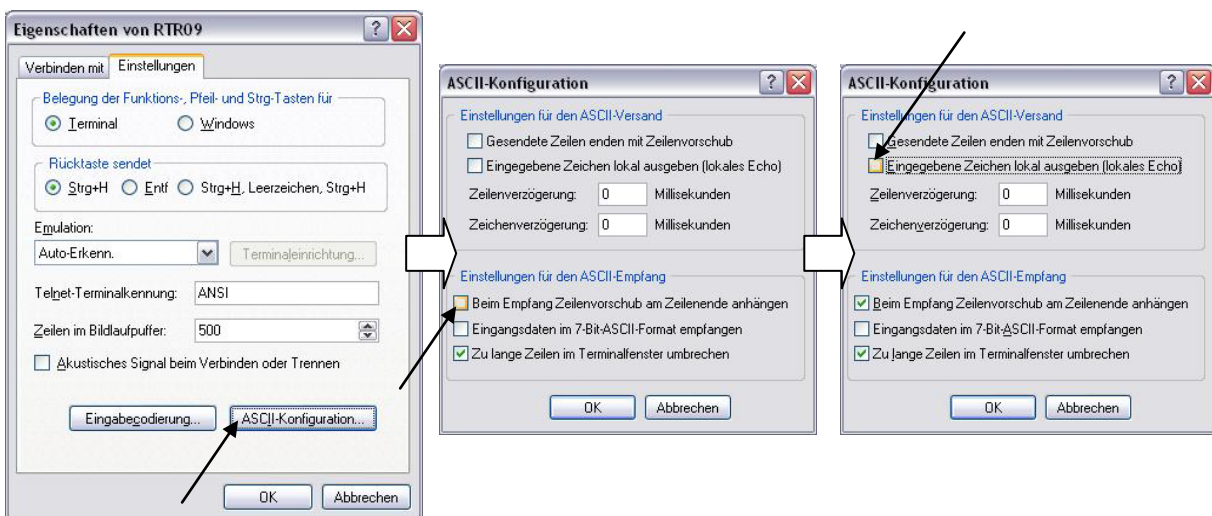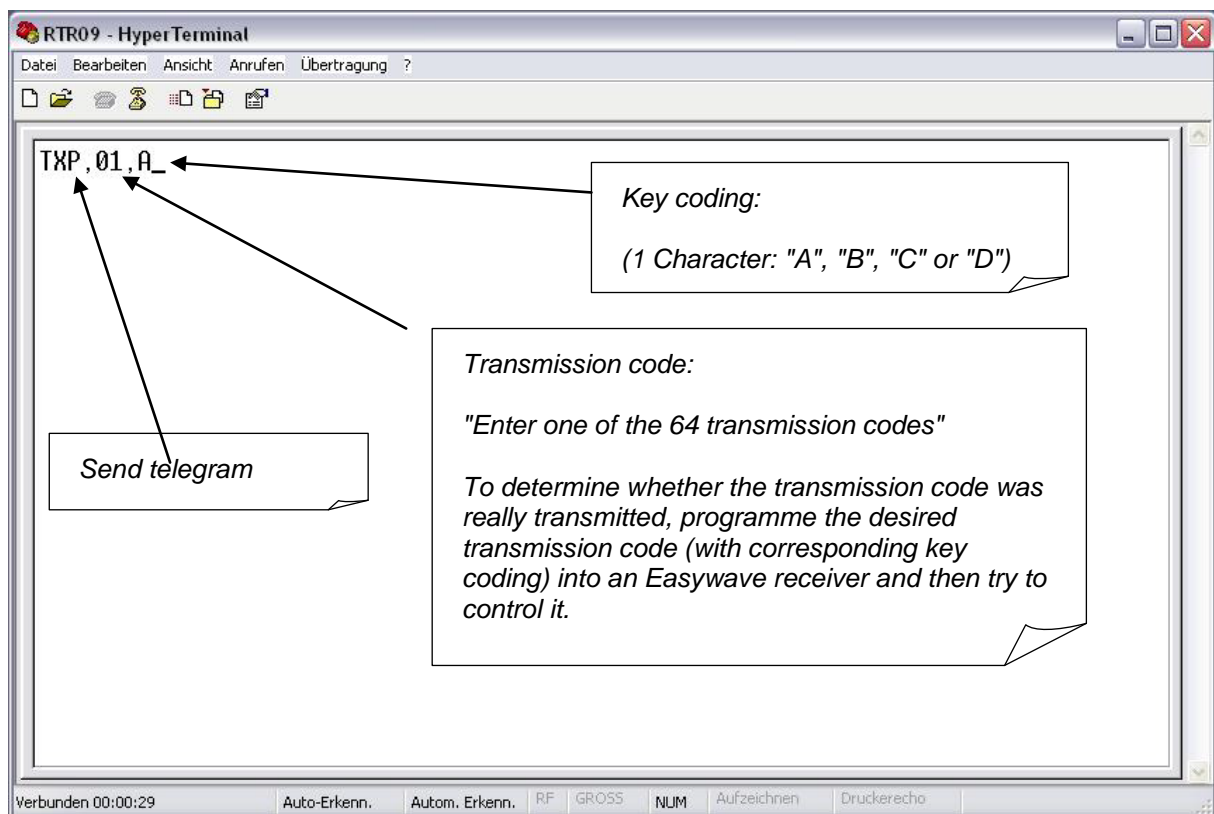
2.3 Send transmission codes

With the aid of the interface description, you can send Easywave telegrams and call up the statuses of the USB transceiver.

So far, with the RTR09 Easywave telegrams, we have only receive, whereby *"REC"* stands for the receipt of an incoming Easywave telegram.

However, the RTR09 offers the possibility to transmit up to 64 distinct transmission codes with Easywave Telegram.

Make sure that you separate the single commands from the transmission codes and/or key codes, as in the example, by a comma.

Confirm your complete input with the Enter key. If the entered command is not correct, its execution will be acknowledged with "*Error".*

To call up the ID of the RTR09, enter "*ID?"*. The ID description can be found in the description of the interface (see Chapter 3).

Further examples:

To query the LED: enter "*LED?"*. You receive the response: *"ON"* or *"OFF".*

To switch on LED: enter *"LED,ON".* the LED lights up.
  (Make sure to use the comma!)

To switch off LED: enter "LED,OFF". the LED is not lit up.
  (Make sure to use the comma!)

3   Interface description

To control the USB transceiver, familiarise yourself with the enclosed interface description.

3.1   Parameters of the virtual serial interface

57600 Baud, 8-Bit, no parity, 1 stop bit, no flow control

3.2   General structure of the transfer protocol

Data 1	Separator	Data 2	Separator	Data 3	Separator	...	End
ASCII Text	„,“ (comma)	ASCII Text	„,“	ASCII Text	„,“		**„\r“** (CR)

- The data contain only displayable ASCII characters from the range 0x20 to 0x7f.

- If a "**,**" (comma) or "****" (back slash) shall be sent in the data, these must be preceded by a "\", the recipient must then remove these additional "\" again.

- Numbers must always be transmitted as ASCII data.

3.3   Explanations of the transfer protocol

- Position 1**a**, 1**b** etc. means that the following value is transmitted alternatively at Position 1.

- Contents enclosed within " " (inverted commas) will be transmitted as given in the form of text (without " " inverted commas!).

- All actions performed successfully will be acknowledged with "OK", all others with "ERROR". This does not apply to actions the results of which are special return values. Success is shown by the return, an error by "ERROR".

- Commands must not be combined, i.e. each one must first be acknowledged.

3.4   Communication

Designation	Data			
	Item	Name or "contents"	Size/Type	Comments
General [1]) **Status**	1a	"OK"	Text	Successfully executed
	1b	"ERROR"		An error occurred
Identify	1	"ID?"	Text	Request device identification
Response	*1*	*"ID"*	*Text*	
	2	*USB Vendor ID*	*2 Byte Hex*	*MSB first*
	3	*USB device ID*	*2 Byte Hex*	*MSB first*
	4	*Device version*	*2 Byte Hex*	*MSB first*
Positions Queries	1	"GETP?"	Text	Request number of memory positions (transmitter channels)
Response	*1*	*"GETP?"*	*Text*	
	2	*Number*	*1 Byte Hex*	
Position read	1	"RDP?"	Text	Request data to given position
	2	Position	1 Byte Hex	Position value
Response	*1*	*"RDP?"*	*Text*	
	2	*Position*	*1 Byte Hex*	*Position value*
	3	*22 bit serial number*	*4 Byte Hex*	*MSB first, right-aligned* *fill unused bits with zeros*
Telegram send	1	"TXP"	Text	Send telegram in accordance with given position
	2	Position	1 Byte Hex	Position value
	3	Key	1 Character: "A" or "B" or "C" or "D"	Desired key coding
Received Telegram [2])	1	"REC"	Text	
	2	22 bit serial number	4 Byte Hex	MSB first, right-aligned fill unused bits with zeros
	3	Key	1 Character: "A" or "B" or "C" or "D"	Received key coding

---

[1]   This general status report follows the execution of every command as a matter of course, but the report is transmitted only after a possible special response.

[2]   The device transmits every telegram received to the host computer; transmission must be effected at least every 100 ms.

Designation	Data			
	Item	Name or "contents"	Size/Type	Comments
ECHO Queries	1	"ECHO?"	Text	Request ECHO status
Response	*1a*	*"Echo is ON"*	*Text*	*ECHO is displayed*
	1b	*"Echo is OFF"*		*ECHO is NOT displayed* (**basic status**)
ECHO Switch on	1	"ECHO"	Text	
	2a	"ON"	Text	Switch on ECHO, i.e. all inputs are displayed again
Switch off	2b	"OFF"		Switch off ECHO
Query **red LED**	1	"LED?"	Text	
Response	*1a*	*"Led is ON"*	*Text*	
	1b	*"Led is OFF"*		***Basic status***
Red LED Switch on	1	"LED"	Text	
	2a	"ON"	Text	
Switch off	2b	"OFF"		
Query **key**	1	"BUTTON?"	Text	
Response	*1a*	*"Button is pressed"*	*Text*	
	1b	*"Button is released"*		
Start bootloader	1	"Bootloader"	Text	RESET terminate the bootloader
Response	*1*	*"Bootloader is starting now !"*	*Text*	