



USB Communication with HTerm Terminal Software

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USB INTERFACE TO CP PANELS

All CP Series panels from [E³] using the CC0064 controller utilize the FTDI USB-to-Serial chipset. The following description uses the CP0304 desktop control panel as a reference example. The USB interface works analogously with all other panels.

The CP0304 is a desktop control panel with 12 Sx6432 switches controlled via the RS232 or USB interface of the integrated CC0064 controller.



INSTALLATION

To install the CP0304 hardware, plug a standard DB9 RS232 cable OR a USB Type B cable into the USB port on the back of the unit and plug in the 5V power supply into the unit and a wall outlet. (see Fig. 1.)

NOTE: Only 1 serial interface may be used at a time in order to prevent communication conflicts.

For this User Guide a USB interface is assumed.



Fig. 1: CP0304 power connector (right), RS232 DB9 female connector (center) and USB Type B connector (left)

POWER ON

On Power-On all switches will turn dark red and display the [E³] logo on each switch. (see Fig 2.)

USB Port Installation

The CP0304 uses a FTDI USB-to-serial chipset. When connected to a PC the operating system will recognize the FTDI USB Serial Converter and install it under an available COM port.



Fig. 2: CP0304 on Power On

Please check your COM port assignments under the Device Manager (see Fig. 3) on your system to verify the correct port assignment.

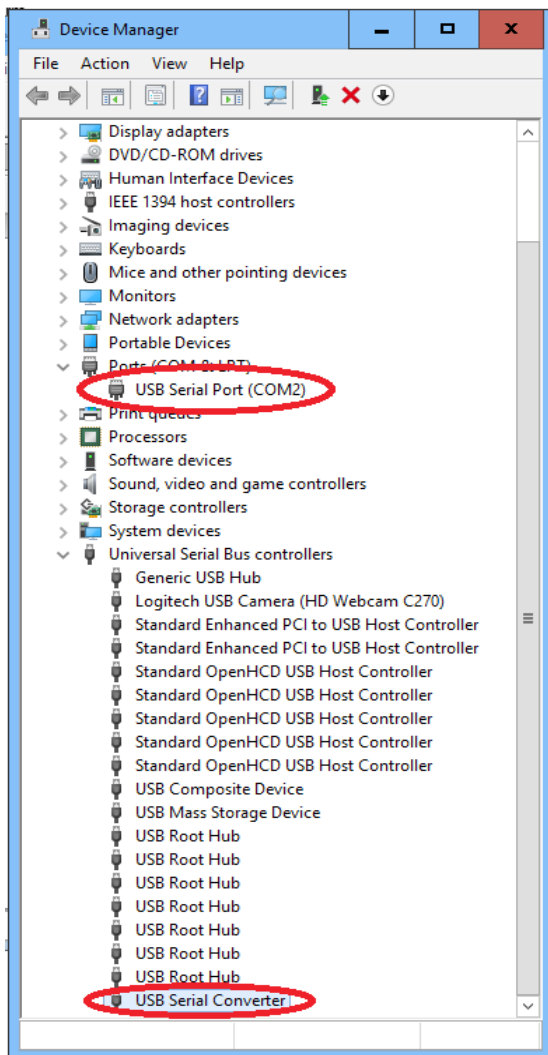


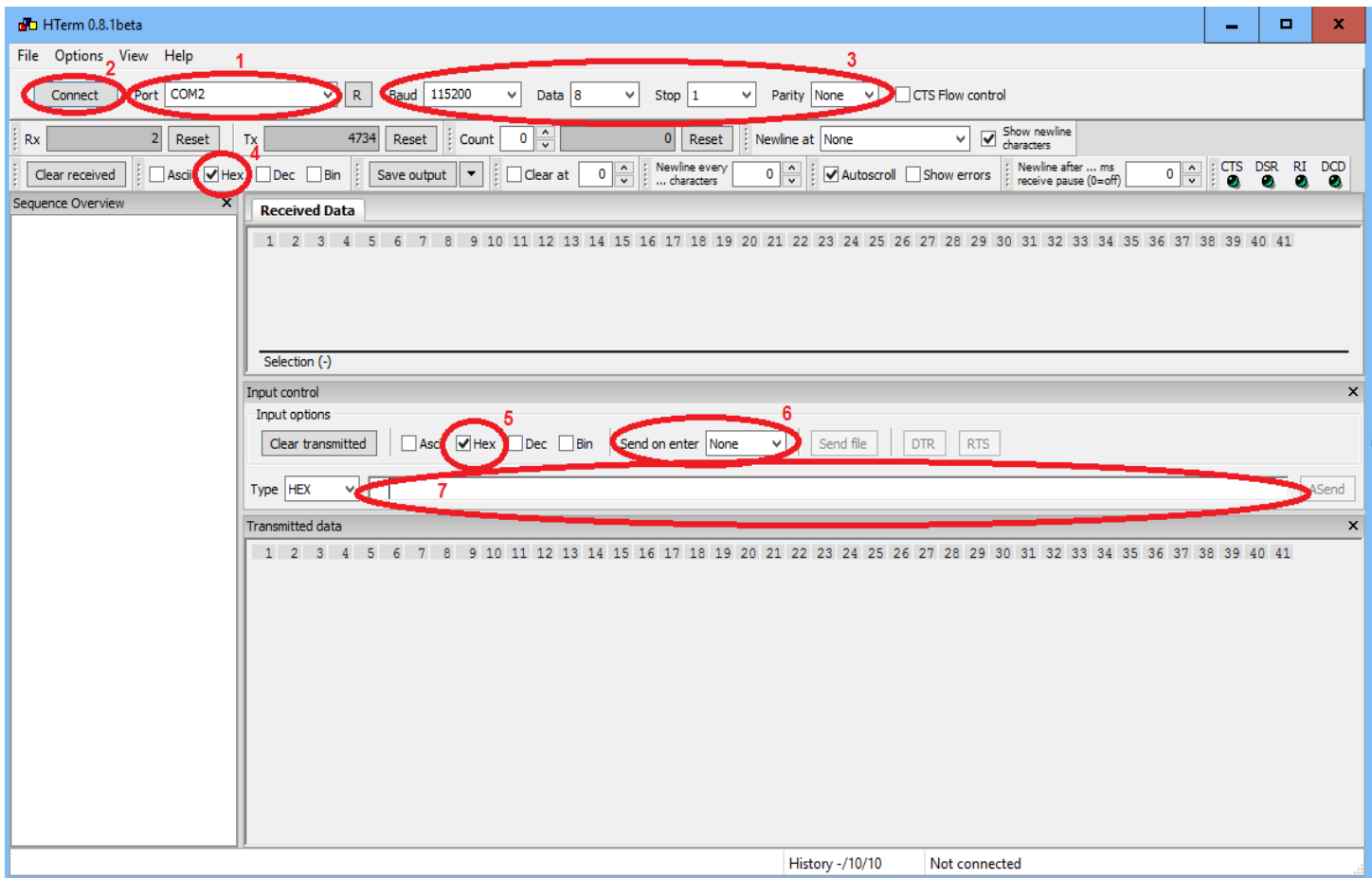
Fig. 3: Device Manager showing COM2 assignment and USB Serial Converter

HTERM TERMINAL SOFTWARE

HTerm is a terminal software that allows you to interface with the CP04304 and can be downloaded [here](#).

HTerm.exe

To start the program, extract the HTerm.exe file from the ZIP archive and run the program.



After starting the HTerm program, please confirm the following settings:

- 1 COM port assignment (in this case **COM2**)
- 2 Click **Connect** to establish communication with the CP0304
- 3 The communication settings should be
Baud: 115200 – Data: 8 – Stop: 1 - Parity: None
- 4 Data format for receiving data should be set to **HEX**
- 5 Data format for transmitting should be set to **HEX**
- 6 Send on enter should be set to **None**
- 7 Copy and Paste your CP0304 commands here and transmit them by hitting **ENTER**

Please note that the CP0304 must be powered on and connected prior to any data transfer.

Code Examples

Cut and Paste the following code examples into the command line and transmit the commands by pressing ENTER.

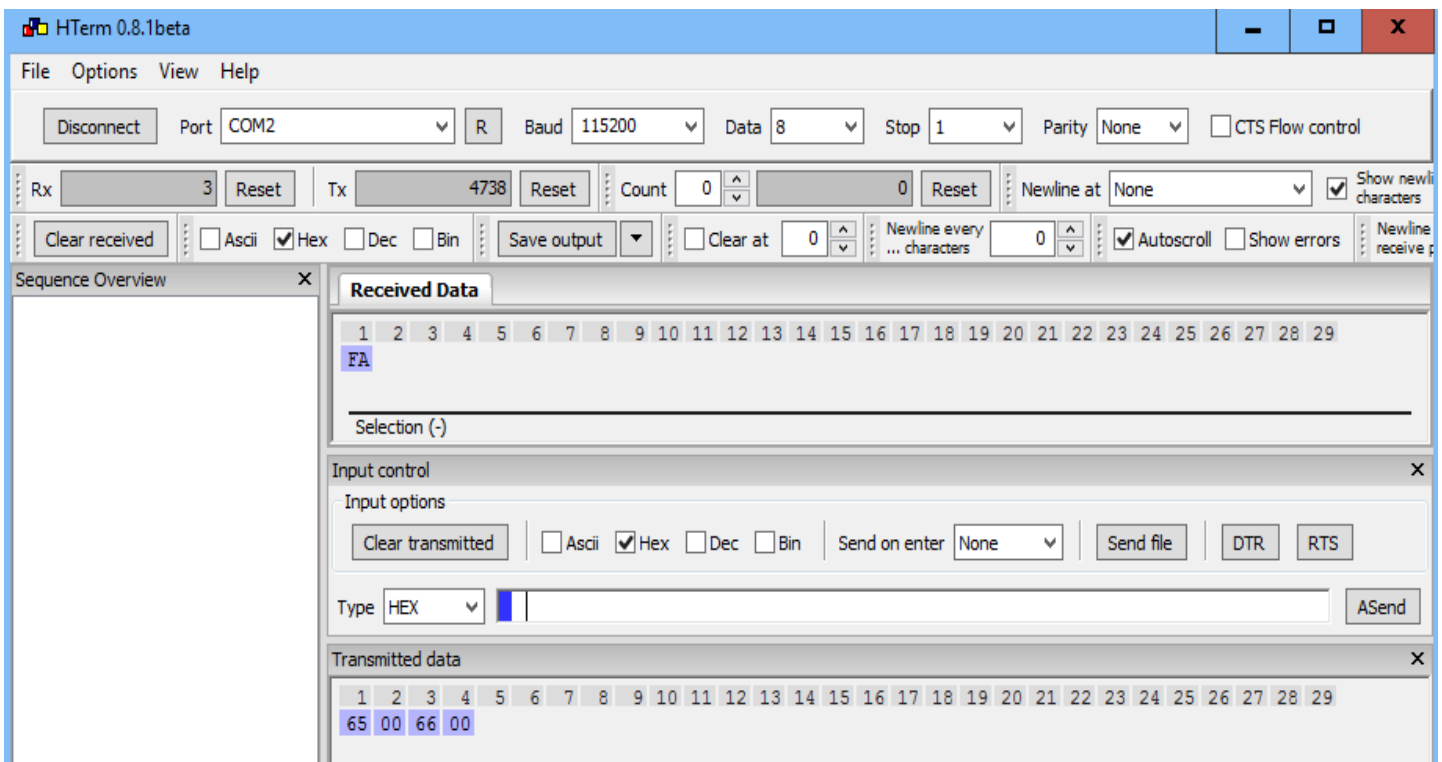
All commands for the SB switches and the CC0064 controller can be used in this fashion. Please refer to the respective datasheets and manuals for more information on the extended command set.

Start Up Command

This commands needs to be transmitted once after each Power On or Reset to deactivate the Heartbeat function of the CP0304.

65 00 66 00

The CP0304 will return a **FA** as an Acknowledge



Background Colors

All keys Red: **FF 00 42 3F 00 00**

All keys Green: **FF 00 42 00 3F 00**

All keys Blue: **FF 00 42 00 00 3F**

All keys Off: **FF 00 42 00 00 00**

RGB colors different color intensities of Red Green and Blue on keys 1 to 12:

```
FF 01 42 0A 00 00 FF 02 42 16 00 00 FF 03 42 1F 00 00 FF 04 42 3F 00 00 FF
05 42 00 0A 00 FF 06 42 00 16 00 DD 03 FF 07 42 00 1F 00 FF 08 42 00 3F 00
FF 09 42 00 00 0A FF 0A 42 00 00 16 FF 0B 42 00 00 1F FF 0C 42 00 00 3F
```

Send Images

All Pixels On: **FF 00 F4 FF**

[E³] Logo on all keys:

```
FF 00 40 0F 0F 0F 0F 0F 0F 0F 0F 00 00 00 08 01 00 00 00 0F 0F 07 08 01 0E
0F 0F 0F 0F 07 08 01 0E 0F 0F 0F 0F 07 08 01 0E 0F 0F 00 00 07 08 01 0E 00
00 00 00 07 08 01 0E 00 00 00 00 00 08 01 00 0C 06 00 00 00 08 01 00 0E 0F
00 00 00 08 01 00 02 09 00 00 00 08 01 00 02 09 00 00 00 08 01 00 06 0C 00
00 00 08 01 00 04 04 00 00 00 08 01 00 00 00 00 07 00 08 01 00 0E 00 01 07
00 08 01 00 0E 0C 01 07 00 08 01 00 0E 0C 01 07 00 08 01 00 0E 0C 01 07 00
08 01 00 0E 0C 01 07 00 08 01 00 0E 0C 01 07 00 08 01 00 0E 0C 01 07 00 08
01 00 0E 0C 0F 07 00 08 01 00 0E 0F 0F 07 00 08 01 00 0E 0F 0F 07 00 08 01
00 0E 0F 00 00 00 08 01 00 00 00 00 00 08 01 00 00 00 00 00 07 08 01 0E
00 00 00 00 07 08 01 0E 00 00 0F 0F 07 08 01 0E 0F 0F 0F 0F 07 08 01 0E 0F
0F 0F 0F 07 08 01 0E 0F 0F 00 00 00 08 01 00 00 00 00 00 08 01 00 00 00
00 00 08 01 00 00 00 0A 02 00 08 01 00 00 08 05 05 00 08 01 00 00 0C 0B
0A 00 08 01 00 00 0E 06 05 01 08 01 00 00 0B 0F 0A 02 08 01 00 08 0F 0A 05
05 08 01 00 0C 0A 0F 0F 0F 08 01 00 0E 0F 0A 0F 07 08 01 00 0D 0A 0F 0F 03
08 01 08 0A 0F 0E 0F 01 08 01 0C 06 0B 0F 0F 00 08 01 02 08 0E 0F 07 00 08
01 0B 0A 0D 0F 03 00 08 09 00 00 0A 00 00 00 08 0D 0A 0A 06 0A 02 00 08 09
00 00 0B 05 05 00 08 01 0B 0A 0D 0B 0A 00 08 01 02 08 06 06 05 01 08 01 0C
06 0B 0D 0A 02 08 01 08 0A 05 0A 05 05 08 01 00 0D 0A 05 0F 0F 08 01 00 06
05 0A 0F 07 08 01 00 0C 0A 0D 0F 03 08 01 00 08 05 0E 0F 01 08 01 00 00 0B
0F 0F 00 08 01 00 00 06 0F 07 00 08 01 00 00 0C 0F 03 00 08 01 00 00 08 00
00 00 08 01 00 00 00 0F 0F 0F 0F 0F 0F 0F 0F 0F
```

Load Image to Memory

This command stores the image in memory position **01** and terminates the command with **FE**:

```
F5 01 0F 0F 0F 0F 0F 0F 0F 0F 00 00 00 08 01 00 00 00 0F 0F 07 08 01 0E 0F
0F 0F 0F 07 08 01 0E 0F 0F 0F 0F 07 08 01 0E 0F 0F 00 00 07 08 01 0E 00 00
00 00 07 08 01 0E 00 00 00 00 00 08 01 00 0C 06 00 00 00 08 01 00 0E 0F 00
00 00 08 01 00 02 09 00 00 00 08 01 00 02 09 00 00 00 08 01 00 06 0C 00 00
00 08 01 00 04 04 00 00 00 08 01 00 00 00 00 07 00 08 01 00 0E 00 01 07 00
08 01 00 0E 0C 01 07 00 08 01 00 0E 0C 01 07 00 08 01 00 0E 0C 01 07 00 08
01 00 0E 0C 01 07 00 08 01 00 0E 0C 01 07 00 08 01 00 0E 0C 01 07 00 08 01
00 0E 0C 0F 07 00 08 01 00 0E 0F 0F 07 00 08 01 00 0E 0F 0F 07 00 08 01 00
0E 0F 00 00 00 08 01 00 00 00 00 00 00 08 01 00 00 00 00 00 07 08 01 0E 00
00 00 00 07 08 01 0E 00 00 0F 0F 07 08 01 0E 0F 0F 0F 0F 07 08 01 0E 0F 0F
0F 0F 07 08 01 0E 0F 0F 00 00 00 08 01 00 00 00 00 00 08 01 00 00 00 00
00 00 08 01 00 00 0A 02 00 08 01 00 00 08 05 05 00 08 01 00 00 0C 0B 0A
00 08 01 00 00 0E 06 05 01 08 01 00 00 0B 0F 0A 02 08 01 00 08 0F 0A 05 05
08 01 00 0C 0A 0F 0F 0F 08 01 00 0E 0F 0A 0F 07 08 01 00 0D 0A 0F 0F 03 08
01 08 0A 0F 0E 0F 01 08 01 0C 06 0B 0F 0F 00 08 01 02 08 0E 0F 07 00 08 01
0B 0A 0D 0F 03 00 08 09 00 00 0A 00 00 00 08 0D 0A 0A 06 0A 02 00 08 09 00
00 0B 05 05 00 08 01 0B 0A 0D 0B 0A 00 08 01 02 08 06 06 05 01 08 01 0C 06
0B 0D 0A 02 08 01 08 0A 05 0A 05 05 08 01 00 0D 0A 05 0F 0F 08 01 00 06 05
0A 0F 07 08 01 00 0C 0A 0D 0F 03 08 01 00 08 05 0E 0F 01 08 01 00 00 0B 0F
0F 00 08 01 00 00 06 0F 07 00 08 01 00 00 0C 0F 03 00 08 01 00 00 08 00 00
00 08 01 00 00 00 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F
```

Store image from buffer in memory location **01** and terminate command with **FE**:

```
F5 01 FE
```

Display image data from memory location **01** on key 3:

```
FF 03 F4 01
```

Write Text in 2 Fonts

The following combined command sends the text string **abcde** in two different font sizes to keys 1 to 4.

In the examples for keys 3 and 4 the text is combined with the underlying image while on keys 1 and 2 the text overwrites the image.

```
FF 00 F4 00 FF 01 F4 FF 64 05 01 01 61 62 63 64 65 FF 02 F4 FF 64 05 01 00
61 62 63 64 65 FF 03 F4 00 FF 03 64 05 01 01 61 62 63 64 65 FF 04 F4 00 FF
04 64 05 01 00 61 62 63 64 65
```


NOTICES

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Technical Notice

This datasheet is intended for technically qualified personnel trained in the field of electronics.

The knowledge of electronics and the technically correct implementation of the content of this datasheet are required for problem free installation, implementation and safe operation of the described product. Only qualified personnel have the required know-how to implement the specifications given in this data sheet.

For clarity, not all details regarding the product or its implementation, installation, operation, or maintenance have been included. Should you require additional information or further assistance, please contact your local [E³] distributor or [E³] Engstler Elektronik Entwicklung GmbH at techsupport@e3-keys.com. You may also visit our website at www.e3-keys.com.

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ORDERING INFORMATION

Part Number	Description
CP0304-SU	Desktop control panel with 12 Sx6432 switches and Rs232 and USB interfaces
SB6432-B	SA pushbutton keyswitch with 64x24 pixel display Black housing (RAL 9005)

CHANGE HISTORY

Version	Date	Comments
0.1	05/17/17	Initial draft document
0.2	09/13/17	Changed document title and properties
0.3	07/15/20	New formatting
1.0	06/20/22	Updated release version