

## **Centauri Application Note 15**

### **How to do Ancillary Data over MPEG Layer 3 with Centauri**

#### **1 General**

In some special cases explained below in this application note it is possible that the ancillary data framing gets lost between the transmitting and the receiving device. This incorrect transmission results in overwritten or discarded data blocks.

#### **2 Details**

With MPEG Layer 3 it is possible to send a maximum of 7 bytes per frame of ancillary data (see Communication Reference Manual, chap. 5.5, Ancillary Data). According to standard, with a sample rate of 48 kHz one frame needs the time period of 24 ms to be transported. In this case one byte consists of 1 start-bit, 8 data-bits as well as 1 stop-bit, so 1 byte corresponds to 10 baud. If we now use the formula for getting the baud rate needed, we get:

$$7 * 10 / 0,024 = 2900 \text{ bps approximately}$$

An adjusted baud rate of 2400 bps on the device can lead to the following situation:

- There is more ancillary data sent with the MPEG-data than can be transported via the serial port which generates a data overflow.

If, in contrast, a higher baudrate, e. g. 4800 bps is set, the following problem can occur.

- The Centauri takes more data than the MPEG-data is able to carry.

So there are two ways to provide an accurate transmission of ancillary data with MPEG Layer 3.

- The baudrate of both devices must have a lower value than the MPEG data stream.
- The device can have a higher baud rate as the MPEG data. In this case a handshake protocol is required for organizing the data flow.

### 3 Handshake

The task of a handshake protocol is to check whether the line is completely busy or not. If it is, the further transport of data will be delayed for a specific time interval so that no data will get lost. According to Communication Reference Manual, chap. 4.12.5, Ancillary Data Interface Handshake, there are 3 different handshake-protocols available with the Centauri. The following list shows these protocols with their particular difficulties in use.

- **XonXoff**

Status information is included within the data. The same symbols can occur, when a file is sent, which can lead to failures.

- **DSRDTR**

Wire not available

The program HyperTerminal (part of the MS-operating system) doesn't support this protocol.

- **RTSCTS**

Buffer capacity full

For this protocol the following null modem cable is required.

<b>Pin No. at Centauri (DB 9 male)</b>	<b>Pin description</b>	<b>Pin No. at PC (DB 9 male)</b>	<b>Pin description</b>
1; 6	Data Carrier Detector (DCD) Data Set Ready (DSR)	4	Data Terminal Ready (DTR)
2	Received Data (RD)	3	Transmitted Data (TD)
3	Transmitted Data (TD)	2	Received Data (RD)
4	Data Terminal Ready (DTR)	1; 6	Data Carrier Detector (DCD) Data Set Ready (DSR)
5	Ground (GND)	5	Ground (GND)
7	Request to Send (RTS)	8	Clear To Send (CTS)
8	Clear to Send (RTS)	7	Request to Send (RTS)
9	not used	9	not used

**Note:** The zero modem cable shipped with the Centauri cannot be used for this since the CTS pins are bridged to the RTS pins.

- **None**

If no handshake protocol is used, the baud rate has to be less than 2900 baud, otherwise the data transmission can be interrupted.