Synchronization Clock 1.0

Document Version 1.0

1. Introduction

The Harp Synchronization Clock is a bus that disseminates the actual current time to Harp devices.

It’s a serial communication that contains the time information and each device uses the last byte of the transmission to align themselves with the current time.

2. Serial configuration

Baud rate used is 100 kbps.

The last byte starts _exactly_ 672 us before the elapse of the current second (picture bellow).

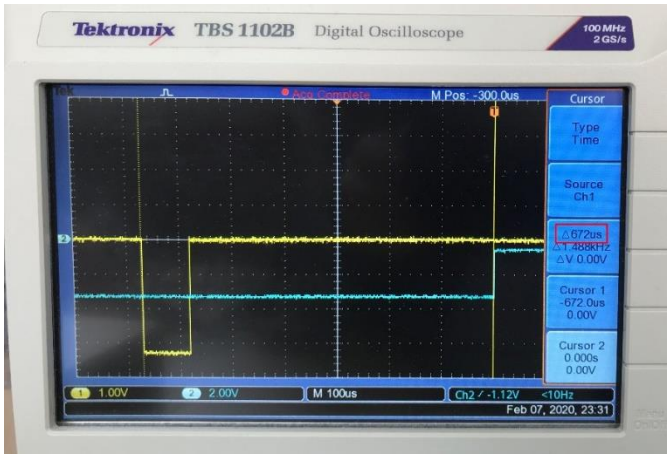
The packet is composed of 6 bytes (header[2] and timestamp_s[4])

- header[2] = {0xAA, 0xAF)

- The timestamp_s is of type uint32 little-endian and contains the current second

IMPORTANT:

Since there's no checksum to validate the packet, the sender must make sure that, if the header sequence is present in the, the packet is not sent.



3. Example code

Example of a microcontroller C code:

```
ISR(TCD0_OVF_vect, ISR_NAKED)
    {
        if ((*timestamp_byte0 == 0xAA) && (*timestamp_byte1 == 0xAF)) reti();
        if ((*timestamp_byte1 == 0xAA) && (*timestamp_byte2 == 0xAF)) reti();
        if ((*timestamp_byte2 == 0xAA) && (*timestamp_byte3 == 0xAF)) reti();

        switch (timestamp_tx_counter)
        {
            case 1:
                USARTD1_DATA = 0xAA;
                break;
            case 2:
                USARTD1_DATA = 0xAF;
                break;
            case 4:
                USARTD1_DATA = *timestamp_byte0;
                break;
            case 6:
                USARTD1_DATA = *timestamp_byte1;
                break;
            case 7:
                USARTD1_DATA = *timestamp_byte2;
                break;
            case 1998:
                USARTD1_DATA = *timestamp_byte3;
                break;
        }
```

4. Physical connection

The physical connection is made by a simple audio cable. In the same folder of this file, you can find an example of the sender and the receiver.

The connector used is from Switchcraft Inc. and has the part number 35RASMT2BHNTRX

Version Control

V1.0
First version.