**Test STM**

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1. **Setup**
2. Hardware**:**

* USB UART TX 🡪 PD6 (Pin 3)
* USB UART RX 🡪 PD5 (Pin 2)
* DS1307 SCL 🡪 PB4 (Pin 12)
* DS1307 SDA 🡪 PB5 (Pin 11)
* Common GND

1. Hercules**:**

* Baud: 115200
* Data size: 8
* Parity: None
* Handshake: OFF
* Mode: Free
* Hex Enable
  1. **Reset:**

Khi thiết bị reset (bởi nút nhấn, mất điện, watchdog), sẽ gửi 1 frame thông báo (Func 0xFE, Data 0x16)

Respond: **2A** FE 00 00 00 00 00 00 00 16 **23**

* 1. **Send data:**

Từ Hercules gửi 1 frame request data. (Func 0x01, Device x)

Send: **2A** 01 06 00 00 00 00 00 00 00 **23** (Request humid data)

STM respond xác nhận frame (Func 0xEF)

Respond: **2A** EF 00 00 00 00 00 00 00 00 **23** (Confirm frame)

STM respond data của device (Func 0x01, Device, Data)

Respond: **2A** 01 06 00 00 00 00 00 00 40 **23** (Send humid value)

* 1. **Device control:**

Từ hercules gửi 1 frame control device (Func 0x02, Device, Data)

Send: **2A** 02 02 00 00 00 00 00 00 64 **23** (Turn on device 2)

STM respond confirm frame

Respond: **2A** EF 00 00 00 00 00 00 00 00 **23** (Confirm frame)

STM respond trạng thái mới của thiết bị

Respond: **2A** 01 02 00 00 00 00 00 00 64 **23** (Device new status)

* 1. **Set time:**

Từ Hercules gửi 1 frame set time (Func 0x05, Time)

Send: **2A** 05 00 11 08 04 10 00 00 64 **23** (Set time 2017, August 8th, 4pm)

STM respond confirm frame (Func 0xEF)

Respond: **2A** EF 00 00 00 00 00 00 00 00 **23** (Confirm frame OK)

Nếu quá trình set realtime thành công, STM sẽ không gửi gì thêm.

* 1. **Send RTC task:**

Từ Hercules gửi 1 frame RTC task (Func 0x03, Device, Time, Data)

Send: **2A** 03 01 10 05 02 10 01 00 64 **23** (Turn on device 1 at 16h01)

STM respond confirm frame (Func 0xEF)

Respond: **2A** EF 00 00 00 00 00 00 00 00 **23** (Confirm frame)

* 1. **Update device status:**

Từ Hercules gửi 1 frame update device status (Func 0x06)

Send: **2A** 06 00 00 00 00 00 00 00 00 **23** (Request device status)

STM respond confirm frame (Func 0xEF)

Respond: **2A** EF 00 00 00 00 00 00 00 00 **23** (Confirm frame)

STM respond device status (Func 0x01, Device, Data)

Respond: **2A** 01 01 00 00 00 00 00 00 64 **23** (Device 1 on)

Respond: **2A** 01 02 00 00 00 00 00 00 00 **23** (Device 2 off)

* 1. **Wrong function:**

Từ Hercules gửi 1 frame sai function

Send: **2A** 0A 02 00 00 00 00 00 00 64 **23** (No func 0x0A)

STM respond thông báo lỗi function (Func 0xFE, Data 0x12)

ERR: **2A** FE 00 00 00 00 00 00 00 12 **23** (Wrong function)

* 1. **Wrong data:**

Từ Hercules gửi 1 frame sai data (sai device, data high/low)

Send: **2A** 01 01 00 00 00 00 00 00 60 **23** (On/Off device with value 0x60)

STM respond thông báo lỗi data (Func 0xFE, Data 0x13)

ERR: **2A** FE 00 00 00 00 00 00 00 13 **23** (Wrong data value)

* 1. **Sensor Disconnected:**

Từ Hercules gửi 1 frame request giá trị cảm biến

Send: **2A** 01 06 00 00 00 00 00 00 00 **23** (Request humid data)

STM respond confirm frame

Respond: **2A** EF 00 00 00 00 00 00 00 00 **23** (Confirm frame)

Nếu STM không kết nối được tới cảm biến sẽ trả thông báo lỗi (Func 0xFE, Data 0x15)

ERR: **2A** FE 00 00 00 00 00 00 00 15 **23** (Sensor disconnected)

* 1. **Real time IC disconnected:**

Từ Hercules gửi 1 frame set time hoặc frame RTC task

Send: **2A** 05 00 11 08 04 10 00 00 00 **23** (Set time 2017, August 8th, 4pm)

STM respond confirm frame

Respond: **2A** EF 00 00 00 00 00 00 00 00 **23** (Confirm frame OK)

Nếu STM không kết nối được tới IC real time sẽ trả về thông báo lỗi (Func 0xFE, Data 0x14)

Err: **2A** FE 00 00 00 00 00 00 00 14 **23** (Real time IC disconnected)